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noise element

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NOISE ELEMENT
CITY OF TORRANCE
PLANNING DEPARTMENT

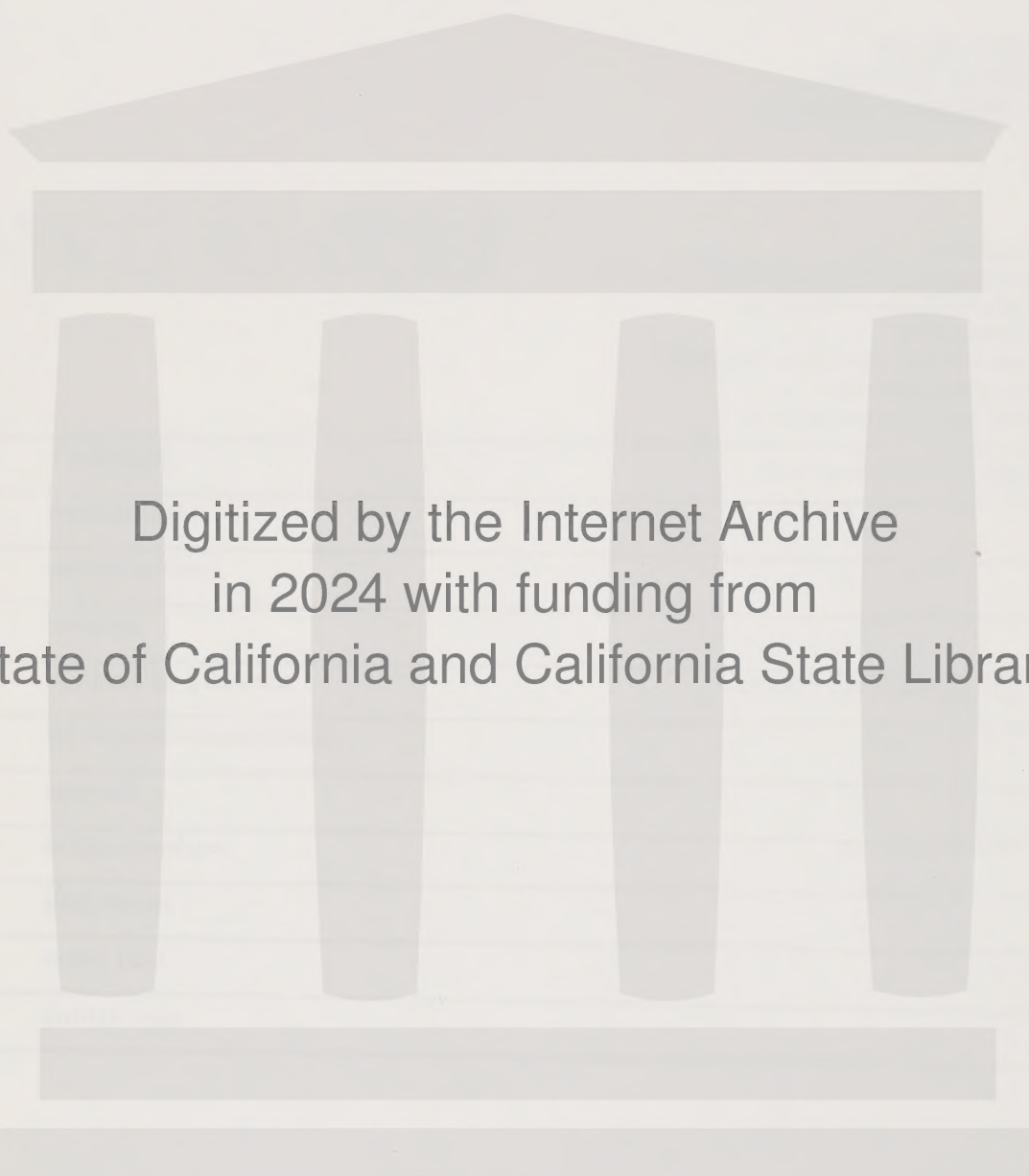
*Noise pollution is
the quiet, sleeper issue of the environmental crisis
and when our people are fully aware
of the damage done,
peace and quiet surely will rank along with
clean skies and pure waters
as top priorities for our generation.*

Vice President Nelson Rockefeller

ADOPTED MARCH 18, 1975

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introduction and authorization

Noise has long been a major pollutant of man's environment. As long as two thousand years ago, the Greek writer, Horace, complained about the noises that disturbed the citizens of Rome. However, it was not until recent times that the impact of noise upon man was more fully understood.

The September 2, 1972, edition of the *Los Angeles Times* contained an article written by Dr. Vern Knudsen¹ which was titled "Noise Said to Shorten Lifespan." The first sentence of this article reads: "Americans today, to a large extent, are paying in a shortened tenure of life, and reduced efficiency, for the noise amid which they must work and live." More recently, Victor Gruen, noted architect and urban planner, declared: "Noise and smog are slow agents of death."

Exposure to increasing levels of noise has confronted man throughout his technological evolution. In 1954, Dr. Knudsen disclosed that during the preceding 25 years the loudest noises to which man was exposed had increased 25 decibels, from 110 to 135 dBA, an average of one decibel per year. It was further estimated by Dr. Knudsen that if this rate of increase continued for another 25 years, by 1979 noise would reach a maximum level of about 160 dBA, which probably would be lethal to man.²

Modern man has surrounded himself with an array of appliances, machines and gadgets which give testimony to his technological progress. These devices have also reduced the amount of work that man must do to function in today's society, hence, providing him with increased leisure time. However, when taken collectively, the noise associated with these conveniences may pose a threat to human health and well-being.

Obviously, noise will always exist in an urbanized environment, and will increase as urbanization becomes more intensive. However, if this process continues without attenuation, a critical level will eventually be reached. The prime question then is, what is a critical level? Furthermore, do we want to accept the *maximum tolerable* limit of noise or do we want to attenuate noise to a *desirable* level?

Many people today may be accepting and adapting to excessive levels of noise exposure as a natural by-product of urbanization. This situation is not only unwarranted, it is dangerous as well. Rene Dubos, microbiologist and educator, has clearly issued the warning in his book *Man Adapting*:³

"The aspect of the problem of adaption that is probably the most disturbing is paradoxically the very fact that human beings are so adaptable. This very adaptability enables them to become adjusted to conditions and habits which will eventually destroy the values most characteristic of human life."

"The frightful threat posed by adaptability when the concept is applied to human beings in a purely biological context is that it implies too often a passive acceptance of conditions which really are not desirable for mankind."

In 1971, the State of California mandated that each county and general law city include a noise element as part of their general plans; the State later extended this mandate to charter cities. California Government Code Section 65302 (g) requires that local general plans contain:

A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to the following:

- (1) Highways and freeways
- (2) Ground rapid transit systems
- (3) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.⁴

The Government Code further states:

"These noise contours may be expressed in any standard acoustical scale which includes both the magnitude of noise and frequency of its occurrence. The recommended scale is sound level A, as measured with A-weighting network of a standard sound level meter, with corrections added for the time duration per event and the total number of events per 24-hour period."

"Noise contours shall be shown in minimum increments of five decibels and shall be continued down to 65 dBA. For regions involving hospitals, rest homes, long-term medical or mental care, or outdoor recreational areas, the contours shall be continued down to 45 dBA."

Recommendations provided more recently by the State request that the Noise Element contain the following:⁵

A. A statement of general policy indicating the local jurisdiction's general intentions regarding noise and noise sources in the community.

B. Desired maximum noise levels by land use categories.

- C. Standards and criteria for noise emissions from transportation facilities. (It should be noted that control of some noise sources has been preempted by state and federal governments.)
- D. Standards and criteria for compatible noise levels for local "fixed-point" noise sources.
- E. Guide to implementation.
- F. Appendix describing methodology of preparation and sources of data.

purpose

The purpose of the City of Torrance Noise Element is to:

- A. Record the goals, objectives and policies relating to local noise control and formulate a program to reduce and minimize the various sources of noise compatible with the health and welfare of the citizens of Torrance.
- B. Investigate, evaluate, and document existing noise levels within the City.
- C. Identify and analyze existing and potential noise problems.
- D. Make recommendations and serve as a guide for achieving the stated goals of the City in relation to noise emanation.

summary of findings

The following summary of findings is the result of an analysis of noise in the City of Torrance and the available literature on this subject.

GENERAL

1. The definition of noise varies among different groups in society. However, general negativism can be assumed about sound from such sources as trains, pneumatic jackhammers, aircraft, trucks, automobiles, and motorcycles.
2. The following noise limits have been established by the Torrance Municipal Code (refer to map in Appendix C for location of regions). However, the existing code does not cover noise from non-stationary sources such as motor vehicles and aircraft in flight.

Area in Which Noise Receiver Is Located	Noise Level, dB	
	Day	Night
Region 1	70	65
Region 2	60	55
Residential land within 500 feet from the boundary of Region 1 or 2.	5 dB above the limits established for the base region or 5 dB above the ambient noise level, whichever is lower.	
Region 3	50	45
Region 4	55	50
Within the boundary of industrial uses outside Region 1 and 2.	60	55
Within the boundary of commercial uses.	60	55

RESIDENTIAL

1. A comparison of (1) day and nighttime readings, and (2) ambient standards established by the City's noise ordinance revealed that residential areas are generally in conformance with respect to stationary sources, but that portions of various census tracts are impacted with noise.
2. It was observed that above-standard levels of noise recorded in residential areas could be attributed to (1) the proximity of industry and major arterials and/or (2) aircraft overflight. *However, aircraft in flight and motor vehicles operating in accordance with the California Motor Vehicles Code are excluded from the provisions of the existing noise ordinance.*

COMMERCIAL

Excessively high noise levels were recorded at over half of the 8 monitoring points in the major commercial area of the city (Map 1). However, these ambients are not directly attributable to the commercial uses themselves, but to the traffic on the major arterials which serve this area. Moreover, the effects of this noise source are not confined to this commercial area since it also raises the ambients in adjacent residential neighborhoods.

INDUSTRIAL

Based on the maximum limits that have been established by the noise ordinance for industrial areas (see Appendix C), only two industrial monitoring points had ambients in violation of the ordinance.

PARKS AND SCHOOLS

1. Based on the residential land use standard of 55 dBA, seven parks are impacted with noise. Listed in the order of their loudness, the parks are: La Carretera (69.5 dBA), Pueblo Playground (67.5 dBA), Guenser (64.0 dBA), El

Prado (60.0 dBA), Walteria (58.5 dBA) and Hickory (58.5 dBA). (See Map 4).

2. Noise emanating from parks was found to have an impact on residential areas adjacent to the parks. The main cause of complaints associated with noise emanating from parks are public address systems. The issuance of permits for the operation of such systems is governed by the provisions of Article 5 of Chapter 6 (the Noise Ordinance) of the Torrance Municipal Code.

3. Most elementary and middle schools are located away from streets with high traffic volumes, and therefore escape the higher noise levels associated with this noise source. (See Map 5 for schools located along major arterials.)

4. Schools in the vicinity of Torrance Airport and schools that lie beneath the flight patterns of LAX jet aircraft experience sporadic aircraft noise ranging from 50 to 69 dBA, in the classrooms, and from 54 to 79 dBA on the school grounds (refer to Map 6).

5. Only two high schools, North High and Torrance High, were found to have classrooms impacted by traffic noise. North High classrooms fronting on 182nd Street have an ambient of 58 dBA, and Torrance High classrooms fronting on Carson Street similarly have a 58 dBA ambient noise level.

6. Noise from schools is generated by activity on their playgrounds and compares with the noise levels monitored in local parks. As with other land uses there is little effective insulation between the noise source (the schools in this case) and adjacent land uses. Readings in the vicinity of schools which utilize depressed activity fields are 4 dBA less than readings taken adjacent to schools with activity fields constructed at grade.

HOSPITALS AND CONVALESCENT HOMES

1. There is little noise impact on Torrance hospitals because of the large setbacks and special acoustical insulation required for these uses by the City Code.

2. Convalescent homes in residential areas have low exterior noise levels; however, convalescent homes fronting on Torrance Boulevard and in mixed use areas are impacted by traffic noise.

TRAFFIC ANALYSIS

1. Noise generated by vehicular traffic is impacting developed and open areas, such as parks and school playgrounds, fronting on arterials.

2. Based on the Los Angeles County Road Department traffic projections, traffic noise will increase in the future and could have a serious cumulative effect on community ambient noise within the City.



goals/objectives /policies

MAIN GOAL

The residents of the City of Torrance shall be protected on a continuing basis from all sounds detrimental to physical and mental health and general welfare.

SUB-GOAL 1

The City shall ascertain the causes of noise pollution and establish effective noise abatement methods.

Objectives

1. Identify all noise sources associated with each major land use.
2. Determine the level of all noises identified in meeting objective 1 above.
3. Curtail or lessen unnecessary outdoor noises.
4. Reduce the impact of motor vehicle noise through proper street design and building location.
5. Suppress railroad noise where necessary and feasible.
6. Prevent the penetration of noise at the interface of differing land uses.
7. Minimize the impact of industrial, construction, and commercial noise.
8. Periodically monitor all existing transportation routes, both ground and air, found to have unreasonable levels of noise.
9. Establish standards for all types of noise not already covered by local ordinances, and not already preempted by State or Federal law.

Policies

1. Encourage the use of grants and loans for noise abatement projects.
2. Give preference to street plans that reduce noise impact on adjacent lands.
3. Integrate noise attenuation measures in all land development decisions (construction phase included).
4. Require the use of quiet equipment, machinery, and vehicles by the City.
5. Encourage and support efforts by the State of California to abate noise pollution: stricter quantitative noise stand-

ards, shorter compliance time governing operation of all motor vehicles, etc.

6. Rigorously enforce all current State noise regulations pertaining to motor vehicle operations.

7. Include noise barriers along arterials as projects in a capital improvement program.

8. Encourage efforts to require longer over-sea flight paths before turning east for departing aircraft from Los Angeles International Airport.

SUB-GOAL 2

The City shall, on a continuing basis, research and implement new means of noise abatement.

Objectives

1. Research and publish new information related to the various aspects of noise pollution.
2. Monitor all types of vehicles and motorized or non-motorized machinery operated within the City.
3. Establish and maintain open lines of communication between the City and all federal, state, and county agencies involved in noise abatement.
4. Inform residents of the effects of noise pollution and of the ways they can assist in its abatement.

Policies

1. Encourage residents of areas impacted by auto noise to construct fences or walls in front yard setbacks in conformance with the Torrance Municipal Planning and Land Use Code, Section 92.3.1 (see Appendix D).
2. Continue and expand the City's noise abatement program.
3. Include provisions in local codes that require noise insulation in new residential developments in noise impacted areas.
4. Actively pursue the construction of noise barriers along the San Diego Freeway in compliance with and funded by provisions of the *Federal Aid to Highways Act*.
5. Utilize State of California Department of Transportation funds for noise mitigation projects in schools located near freeways.
6. Ordinances governing speed limits should be coordinated with studies on correlation between vehicle velocity and ambient noise levels.
7. Continue utilizing existing Environmental Review procedures to analyze the noise impacts of proposed developments.
8. Expedite local implementation of the noise insulation standards contained in Title 25 of the California Adminis-

trative Code (see Appendix E), but expanded to include all residential uses.

9. Monitor truck routes that traverse residential areas for possible rerouting.

10. Support enabling legislation at all levels of government for enhancement of local authority over noise sources.

11. Maintain a workable and reasonable noise ordinance by periodic review.

12. Pursue funding for noise mitigation projects in schools subjected to noise from aircraft overflights.

TERMINOLOGY

A Scale (dBA) - A method of sound measurement which assigns weighted values to selected frequency bands to numerically reflect the apparent loudness of noise, therefore closely correlating sound with human response. "A" Scale measurements are often referred to as dBA.

Ambient Noise - The all-encompassing noise associated with a given environment, being a composite of sounds from many sources near and far, without inclusion of intruding noises from isolated identifiable sources.

Day - The time period from 7:00 a.m. to 10:00 p.m.

Night - The time period from 10:00 p.m. to 7:00 a.m.

Decibel (dB) - A unit of level which denotes the ratio between two (2) quantities which are proportional to power; the number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

Loudness - The subjective human definition of the intensity of a sound.

Noise - Sound of various frequencies resulting in objectionable or irritating sensation.

Noise Level - The A-weighted sound pressure level as measured using a slow dynamic characteristic for sound level meters. (See Table 1 for an illustrative example of sound pressure levels associated with common sources of noise.)

Pitch - Refers to the frequency of a sound. High pitch refers to high frequencies and low pitch refers to low frequencies.

Sound - Waves that are traveling in the air or in other materials. Sounds can be defined as disturbances in themselves or by the sensation they produce.

Sound Classification

Continuous - A steady sound such as that given off by an air conditioner in operation.

Impulsive - A sound of very short duration such as an automobile backfire or gun shot.

Pulsating - A sound occurring rhythmically such as that from oil pumping equipment.

Pure Tone - A sound sensation characterized by its singleness of pitch.

Sporadic - A sound occurring intermittently such as that of a barking dog.

**TABLE 1
SOUND PRESSURE LEVELS
OF COMMON SOUNDS AND NOISES**

SOUND QUALITY	DECIBELS	SOUND SOURCES
Threshold of Feeling/Pain	120	Rocket engine Ram jet Turbojet: 7,000 lbs. thrust
Deafening	110 100	Propeller aircraft Boiler factory Nearby riveter, drop hammer, thunder Subway & elevated trains
Very loud	90 80	Woodsaw, punch press Loud street noises Noisy factory, screw machine Pneumatic drill Police whistle, portable sander
Loud	70 60	Noisy office Average traffic Normal radio Average factory
Moderate	50 40	Noisy home Average office Ordinary conversation Quiet radio
Faint	30 20	Quiet home Private office Average auditorium Quiet conversation
Very Faint - Threshold of Audibility	10 0	Rustle of leaves Whisper Soundproof room

Source: *Medical and Legal Consequences of Noise Pollution*, AMF Beaird, Inc., May 1970.

findings

In this section of the Noise Element the local perception of noise and the actual noise levels within the City are discussed. The assessment of local noise has been conducted on the basis of (1) random monitoring, and (2) noise contouring.

LOCAL NOISE PERCEPTION

A survey conducted by the Torrance League of Women Voters in 1970, provides information regarding the annoyance caused by noise in the City of Torrance. While "noise" was ranked quite low by respondents when compared with other general problems confronting the City, e.g., traffic congestion, taxes, etc., it was perceived as a major annoyance when compared only with other environmental factors, e.g., smog, overhead utility lines, etc. Of the nine environmental factors that respondents were asked to rank, four were noise-related. Of these, auto noise received the highest ranking (3rd), followed by traffic noise (4th), airplane noise (5th), and industrial noise (9th).

Although it was ranked sixth on a city-wide basis, airplane noise was selected as either the first or second most annoying environmental factor by respondents in the South, Southwest, Riviera, and Walteria sections of the City (see Appendix F). Automobile noise, which was number three on the city-wide annoyance index, was ranked no lower than third in all areas within the City.

ANALYSIS OF NOISE IN TORRANCE

Sources of noise are numerous; any person, animal, moving object, or activity can be a noise source. In the City of Torrance the main sources of noise are vehicular traffic, railroads, industry, commerce, parks, schools, construction activity and aircraft. These sources of noise and the ambient noise levels for the three major land uses in the City (residential, commercial, and industrial) will be discussed in this section. Analysis of parks and schools will be made from two viewpoints because they are not only a source of noise, but are also receivers of noise.

Ambient noise for each major land use category will be discussed for nighttime as well as for daytime hours. The methodology used for determining ambient levels can be found in Appendix B. Since traffic is considered the major source of noise throughout the City, it is discussed more extensively. The mapping of noise contours along major arterials has been conducted. The methodology utilized in preparing these contours appears in Appendix A.

Residential Areas (Daytime Readings)

In the northern residential area of the City it was discovered that portions of census tracts 6502 and 6501.02 had the highest ambients (Map 1). The ambients at three monitoring stations within these tracts were approximately 62 dBA. The major sources of noise causing these high ambients were determined to be traffic on the San Diego Freeway and industrial uses to the south. It should be noted

that since the City's noise ordinance stipulates that a 60 dBA ambient noise level is permissible on residential land within 500 feet of the boundary of Region 1 during daytime hours (see Appendix C), the noise level near 190th Street and Prairie Avenue in census tract 6502 is within the limitations of the noise ordinance.

Residences in the western section of the City experience high ambient noise levels in portions of census tracts 6513.01, 6513.02, 6512.02, and 6506.02. These high ambient levels ranged from 55.7 to 61 dBA (see Map 1). It was determined that traffic on major arterials was a major source of noise causing the high ambient levels. However, due to the frequency of overflights, it was determined that in census tracts 6512.02 and 6513.02, aircraft were also contributing to these high ambients. In a 60 minute time period, 51 aircraft were observed over census tract 6512.02.

Although traffic on Hawthorne Boulevard is the major noise source, a steady flow of traffic on Anza Avenue, Calle Mayor, Pacific Coast Highway, and Palos Verdes Boulevard adds to the ambient noise levels in Southwest Torrance.

In the central and eastern residential areas of the City, the lowest ambient levels were recorded in census tracts 6511 and 6501.02, while the highest were found in census tract 6509.01. Contributing to the ambient noise in these areas were industrial uses and traffic. The highest ambient levels were found near major arterials and near industrial areas (see Map 1).

Residential Areas (Nighttime Readings)

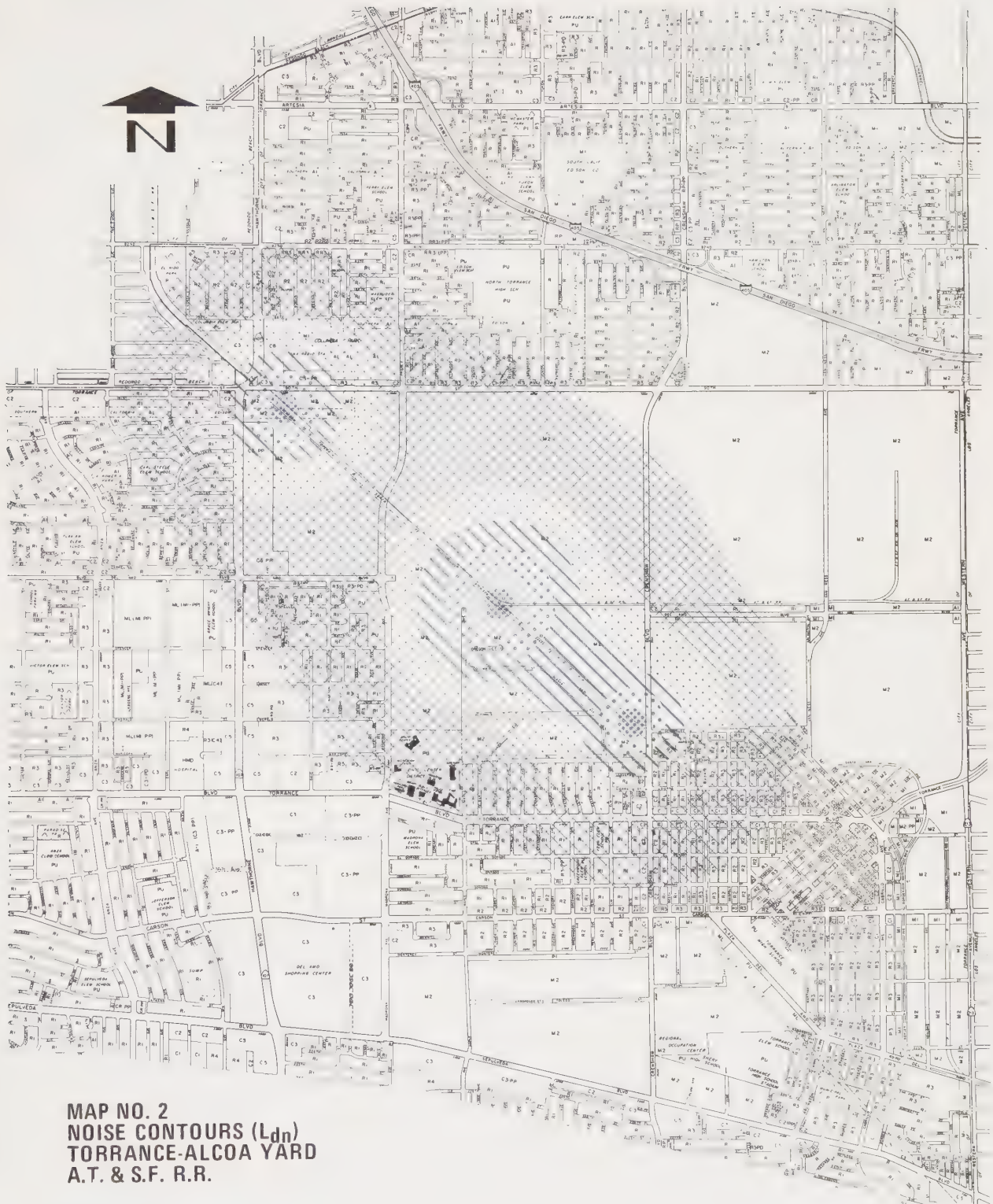
All nighttime readings were taken between 10:00 p.m. and 7:00 a.m. The procedure for monitoring was the same as that used for daytime readings (see Appendix A). The same monitoring stations were used.

The highest nighttime ambient, 63 dBA, was recorded in census tract 6502, which also showed high daytime ambients. This high ambient can be attributed to the fact that this census tract is located between the San Diego Freeway to the north and the central manufacturing district to the south. Additionally, all census tracts bordering the San Diego Freeway exhibited ambients which were close to or over the maximum ordinance standard of 50 dBA. Generally, the nighttime ambients for the residential areas in North Torrance were 5 dBA higher than those for the remainder of the City (see Map 1).

Commercial Sector

Because of the extent of commercially zoned land within the City, determination of the ambient noise for all commercial uses within the City is beyond current staffing and economic capabilities. Consequently, efforts have been focused on the major commercial area in the City, an area consisting primarily of the business and financial district centering on Hawthorne Boulevard and extending from Torrance Boulevard on the north to Sepulveda Boulevard on the south (see Map 1).

While daytime ambients recorded at 5 of the 8 monitoring points in this area were between 61 and 66 dBA, these



- 70 dB
- 65 dB
- 60 dB
- 55 dB
- 50 dB
- 45 dB

Source: Los Angeles County Road Department, 1974

noise levels are not directly attributable to the commercial uses themselves. The commercial development standards and precise plan procedures of the City (e.g., siting requirements on parking lots and delivery areas), minimize the noise impact of these uses on adjacent residential uses.

The major source of noise in commercial areas is the vehicular traffic on the arterials that service these land uses. Moreover, this noise also affects nearby residential areas. Further discussion of traffic noise is found in the Traffic Analysis section of this element.

Night ambients for this area pose no problem since most commercial establishments close before 10:00 p.m. Ambient noise levels during nighttime hours are in conformance with the standard of 55 dBA established by the noise ordinance. Recorded noise levels range from 48 to 52.5 dBA.

Industrial Sector

While scattered industrial areas are found throughout the City, the major industrial sector consists of portions of census tracts 6504, 6509.01, and 6511 as shown on Map 1.

The highest daytime ambients for the industrial sector were recorded in portions of census tract 6504. In the northern portion of this tract the ambient level is 71 dBA; however, the readings were taken near 190th Street and include traffic noise. The actual noise attributable to the industrial activity is probably lower. This is substantiated by the low nighttime ambient (60.5 dBA). The central portion of this tract also had a daytime ambient of 71 dBA. This reading contained little or no noise contributed from outside sources. In the industrial section of census tract 6511, there was no daytime ambient level above the ordinance standard of 60 dBA. Concerning nighttime ambients in these areas, only the central portion of census tract 6504 and the north-central portion of census tract 6509.01 exhibited ambient levels above 60 dBA (see Map 1).

Railroad Noise

The Santa Fe Railroad presents a special problem within the City of Torrance. Trains do not run continuously throughout the day; however, when they do run, they are at least as noisy as peak hour automobile and truck traffic. As shown on Map 1, the Harbor route of the Santa Fe Railroad crosses five census tracts and its A. J. Bayer spur crosses one additional census tract (6508). Freight trains pass through Torrance daily en route to Long Beach at about 2:00 p.m., 5:00 p.m., and 2:30 a.m. These same trains return through the City from Long Beach at approximately 3:30 p.m., 6:30 p.m., and 5:30 a.m.

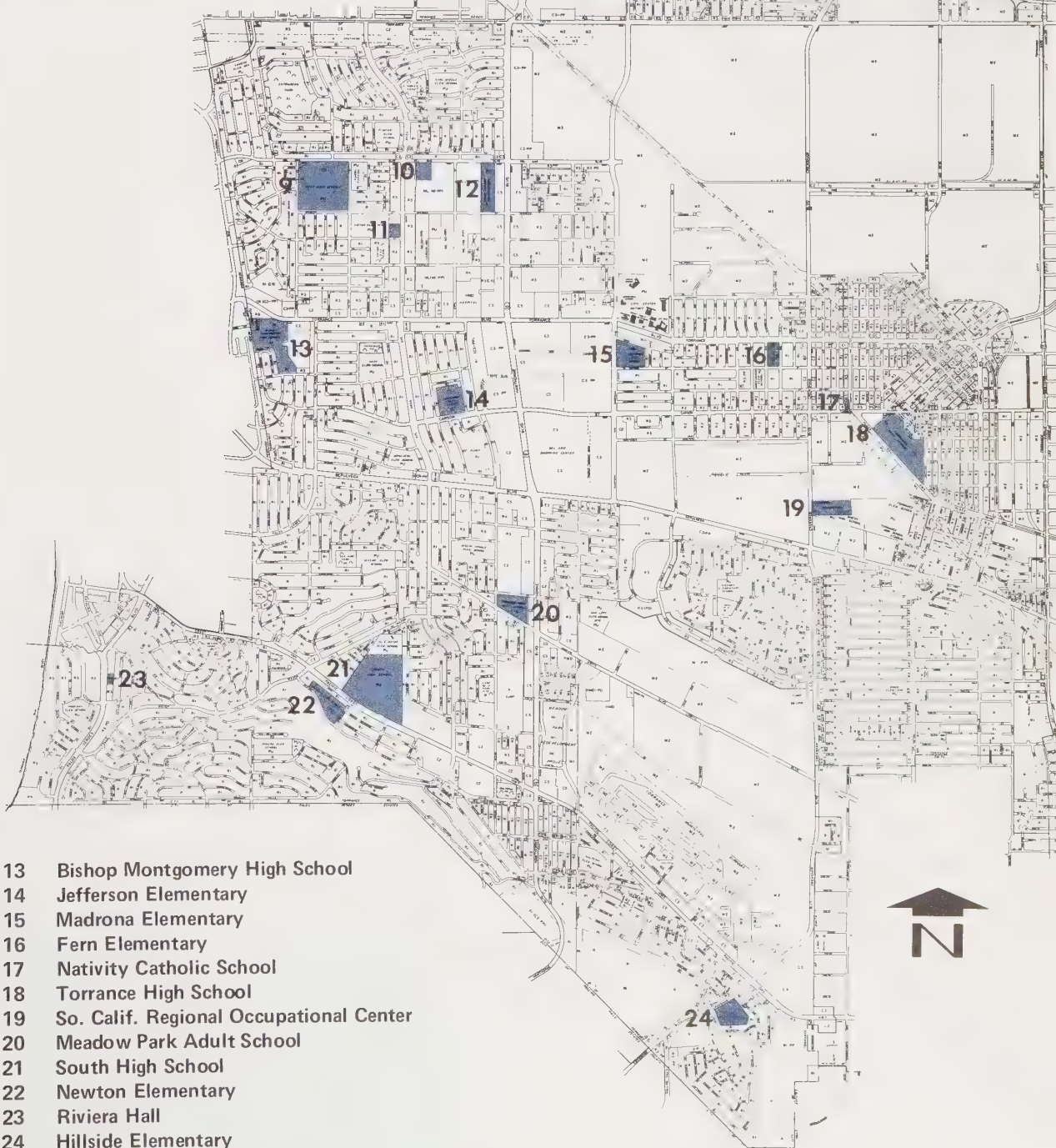
The noise produced by these trains ranges from 75 to 79 dBA depending on their speed (usually 30 to 35 m.p.h.) and the number of cars. Readings were taken at about 65 feet from the rights-of-way which is the approximate distance of most residential units from the tracks. The length of monitoring was 10 minutes and it was carried out in two days to insure reliability. Though no readings were recorded for train horns, it is estimated that they produce noise that is almost 10 dBA above the levels of the trains. A number of complaints have been received about these horns, especially during the nighttime hours. However, Article 6 of the existing noise ordinance does permit the sounding of train horns between the hours of 10:00 p.m. and 7:00 a.m. within limits (see Appendix C).

According to the Los Angeles County Road Department, the Santa Fe Railroad yard located in census tract 6504 has a noise level of 70 dBA within its immediate grounds. However, noise emanating from the yard is 50 dBA or lower upon reaching nearby residential areas, which is within tolerable limits (see Map 2). Noise contours have also been prepared for the entire length of the Harbor Line of the Santa Fe Railway through the City of Torrance. The area lying within the 60 CNEL (dB) contour is shown on Map 3.



**MAP NO. 5
SCHOOLS LOCATED
ALONG MAJOR ARTERIALS**

- 1 Casimir Elementary
- 2 Perry Elementary
- 3 Yukon Elementary
- 4 Ascension Lutheran School
- 5 Magruder Elementary
- 6 Edison Elementary
- 7 North Torrance High School
- 8 Hamilton Adult School
- 9 West High School
- 10 South Bay Junior Academy
- 11 Saint James School
- 12 Grace Wright Elementary



- 13 Bishop Montgomery High School
- 14 Jefferson Elementary
- 15 Madrona Elementary
- 16 Fern Elementary
- 17 Nativity Catholic School
- 18 Torrance High School
- 19 So. Calif. Regional Occupational Center
- 20 Meadow Park Adult School
- 21 South High School
- 22 Newton Elementary
- 23 Riviera Hall
- 24 Hillside Elementary



Traffic Analysis

The State requires that noise contours be mapped along major arterials showing the extent of noise impacts in 5 dBA increments down to a 65 dBA contour. In the vicinity of hospitals, rest homes, and outdoor recreation areas, these contours should be continued down to 45 dBA.⁷ These maps are not useful in determining actual impacts on specific properties but rather serve as a graphic delineation of the patterns of these noise impacts. By viewing these patterns the City can set priorities for its noise abatement projects.

Map 7 shows the general area covered by the 65 dBA noise contour as well as noise sensitive facilities lying within or immediately adjacent to this contour. The contour maps are not included in this document due to their becoming illegible when reduced to an amenable size; they are instead on display in the City Planning Department for public review.

City staff is currently enhancing the contour maps to show noise levels down to 60 dBA for use in implementing Article 25 of the California Administrative Code (see Appendix E).

The noise contours along major arterials were determined through a method provided by the Los Angeles County Road Department and are discussed specifically in Appendix B. This method provides a means of determining noise levels along arterials at peak traffic hours, i.e., levels exceeded only 10% of a 24 hour period.

Noise contouring along major arterials produced the fol-

lowing results (see Map 7):

1. Residences, parks, schools, convalescent homes, and open space fronting on the following arterials are impacted with noise considerably above 65 dBA: Hawthorne Boulevard, Crenshaw Boulevard, Pacific Coast Highway, Western Avenue, Sepulveda Boulevard, Carson Street, Torrance Boulevard, 190th Street, Artesia Boulevard, Madrona Avenue, and Del Amo Boulevard.

2. Areas adjacent to the San Diego Freeway are impacted with noise levels above 65 dBA.

3. Hawthorne and Crenshaw Boulevards have the highest noise levels with traffic noise levels above 90 dBA being recorded 5 to 15 feet out from the edge of the right-of-way.

4. Noise levels decline rapidly where structures equivalent to or higher than 10 feet are present, such as one story single family homes.

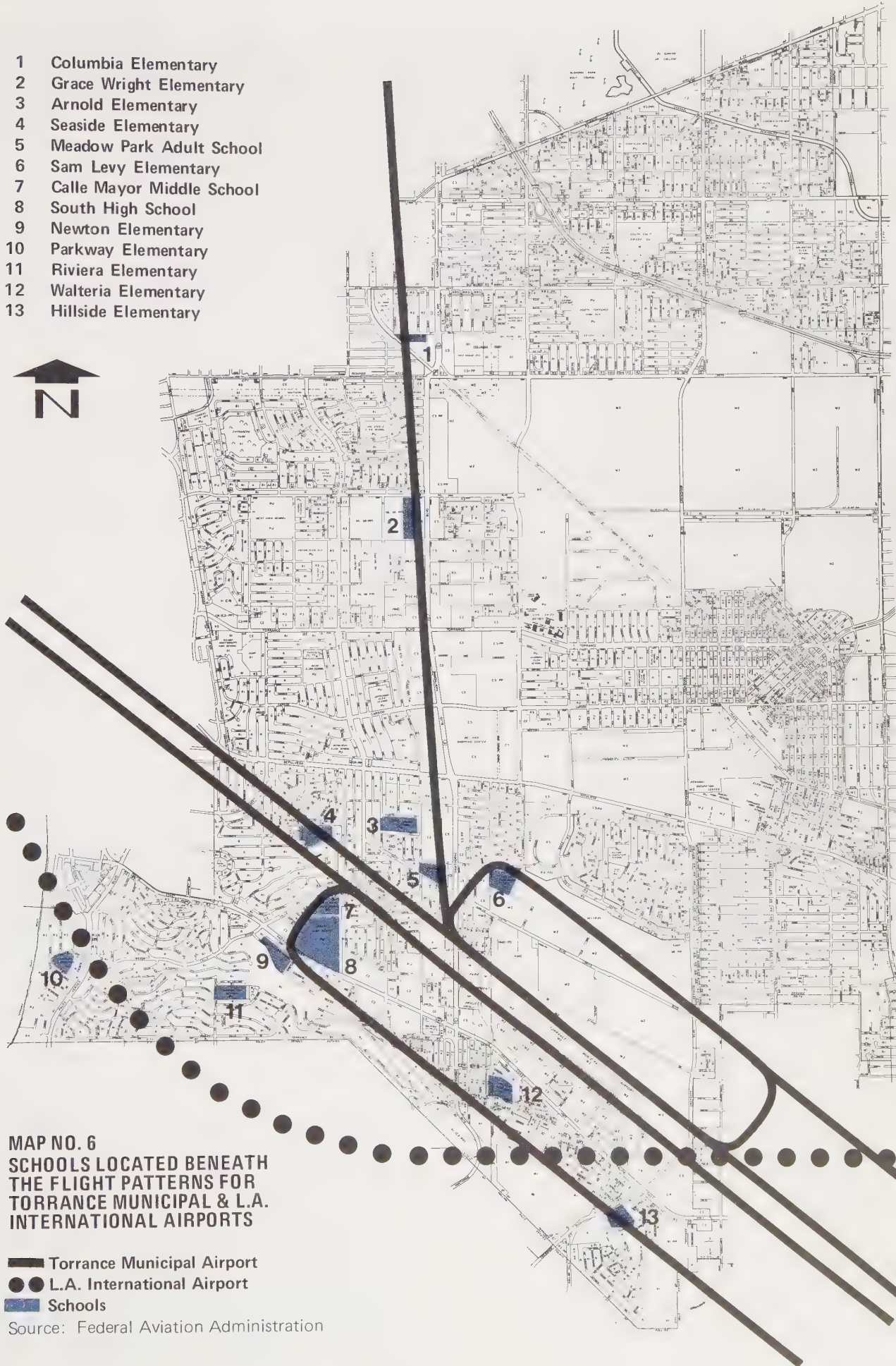
5. Where there are open areas, such as parks, schools, playgrounds, etc., noise levels remain high for considerable distances.

The Los Angeles County Road Department has prepared projections of future traffic volumes along a number of arterials in Torrance. If these traffic volume projections are correct, noise can be expected to increase along these arterials. Table 2 (page 18) shows the projected increase in traffic volumes along various portions of local arterials and the expected increase in noise levels by 1990.

This table shows that noise levels along various arterials will not be considerably higher in the future. However, it is important to recognize the cumulative effect these increases will have on ambient noise levels in the City. Cumulatively, these increases will in all probability cause ambient noise levels in adjacent residential areas to increase above the daytime standard of 50/55 dBA, depending upon location, if mitigating measures are not taken.



- 1 Columbia Elementary
- 2 Grace Wright Elementary
- 3 Arnold Elementary
- 4 Seaside Elementary
- 5 Meadow Park Adult School
- 6 Sam Levy Elementary
- 7 Calle Mayor Middle School
- 8 South High School
- 9 Newton Elementary
- 10 Parkway Elementary
- 11 Riviera Elementary
- 12 Waleria Elementary
- 13 Hillside Elementary



MAP NO. 6
SCHOOLS LOCATED BENEATH
THE FLIGHT PATTERNS FOR
TORRANCE MUNICIPAL & L.A.
INTERNATIONAL AIRPORTS

- Torrance Municipal Airport
- L.A. International Airport
- Schools

Source: Federal Aviation Administration

TABLE 2
PROJECTED TRAFFIC VOLUMES AND NOISE LEVELS FOR SELECTED MAJOR ARTERIALS

<u>Arterial</u>	<u>Existing Noise Levels⁽¹⁾</u>	<u>Projected Traffic Volume Increase</u>	<u>Projected Noise Increase</u>
CRENSHAW			
Between PCH and Del Amo	90 dBA	9,000	5 dBA
Between Del Amo and Redondo Beach Blvd.	90 dBA	15,000	3 dBA
PACIFIC COAST HIGHWAY			
Between P.V. Blvd. and Western	85 dBA	6,000	2 dBA
SEPULVEDA			
Between Western and Prospect	85 dBA	11,000	3 dBA
LOMITA			
Between Crenshaw and Hawthorne	80 dBA	6,000	2 dBA
CARSON			
Between Western and Ocean	75 dBA	6,000	3 dBA
TORRANCE			
Between Western and Prospect	80 dBA	8,000	3 dBA
DEL AMO			
Between Prospect and Hawthorne Blvd.	75 dBA	3,000	2.5 dBA
Between Hawthorne Blvd. and Western	75 dBA	11,000	13 dBA

(1) Maximum levels at edge of pavement for existing streets.

NOTE: There is no direct correlation between increased traffic volumes and increased decibel levels because present traffic volumes on various arterials differ. In other words, if the present traffic volume is high on a particular arterial a few thousand more automobiles will not have as much of an impact as they would on an arterial with a presently low traffic volume.

Source: Los Angeles County Road Department

implementation

As pointed out in the findings, noise pollution does exist in Torrance, and will increase in the future if mitigating measures are not taken to reduce present and future noise.

There are a number of ways of reducing noise. In the following section, the measures the City can implement to reduce noise and where those measures would be most viable are discussed.

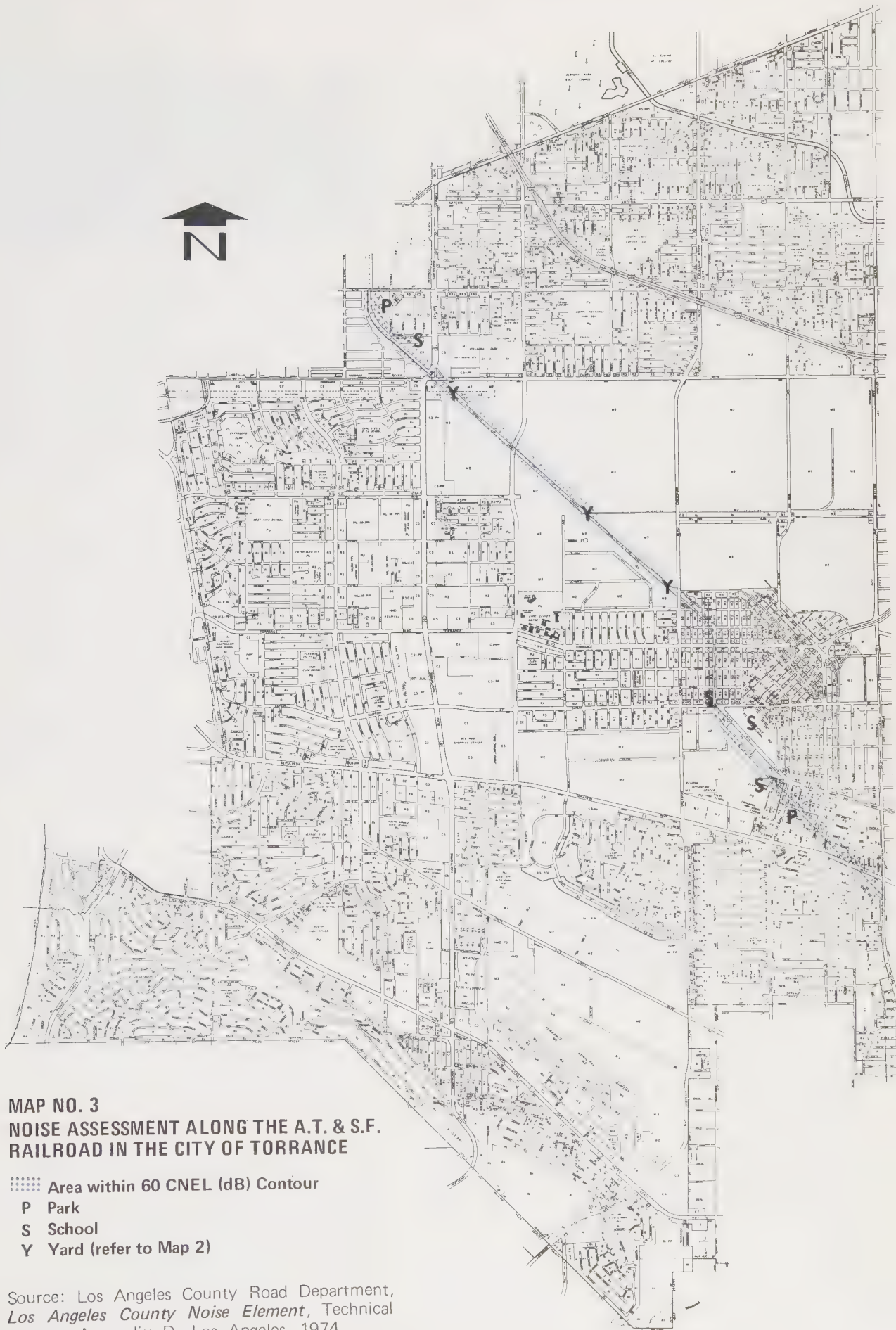
Insulation

Construction standards should be established that require acoustical insulation for all new residential developments which will be adjacent to heavily traveled arterials or industrial areas. Future developments in alignment with aircraft

flight patterns should also be required to have acoustical insulation. This measure would help to achieve acceptable interior noise levels (see Policy 9).

Buffering

Buffering is an effective method of reducing noise. Masonry walls, landscaping or a combination thereof can be used to attenuate noise. Brick walls 10 feet high have been found to reduce noise by 10 dBA.⁸ A reduction of 10 dBA is equivalent to reducing noise in half.⁹ Trees, plants, and ground cover, when placed between the source of noise and the receiver reduce noise by absorption, deflection, reflection, and diffraction. There is little opportunity in Torrance for the abatement of noise impacts via landscape buffering. The most effective buffers that can be used in the City are masonry walls, however, landscaping needs to be used for aesthetic (psychological) purposes whereby the starkness of a masonry barrier can be relieved by trees and shrubs. Fur-





Parks

Of the 25 existing park sites, 15 were monitored to determine their ambient noise levels (see Map 4). Designation of parks to be monitored was made on the basis of their geographic location and their proximity to known noise sources. The actual monitoring points were in quiet areas of the parks. The monitoring period was ten minutes in length and each park was monitored on two days to insure the validity of results. An ambient of 55 dBA was used to detect unacceptably noisy parks because that is the standard established by the noise ordinance for residential areas which are, for the most part, adjacent to the parks. The parks having exceptionally high noise levels are as follows:

La Carretera - 69.5 dBA
 Pueblo Playground - 67.5dBA
 Guenser - 64.0 dBA
 El Prado - 60.0 dBA
 Walteria - 58.5 dBA
 Hickory - 58.5 dBA

Generally, it was found that parks in the eastern half of the City had higher ambients than those in the western half of the City (see Map 4). The noise level at La Carretara Park (the highest of all monitored) can be attributed to freeway traffic. This noise source prevailed even though monitoring was conducted during midday. It is expected that the level is even higher during peak commuting hours. The noise level at Pueblo Playground (second highest of the six parks) can be attributed to both automobile traffic, which is sporadic, and to industrial noise just south of the playground, which is continuous.

The noise level at Guenser Park is attributable to sporadic traffic noise emanating from nearby arterials (Artesia Boulevard and Western Avenue). Other parks exhibiting high ambients include El Prado, Walteria, and Hickory. El Prado Park is affected by large trucks traveling on Carson Street; Walteria Park receives traffic noise from Pacific Coast Highway; and Hickory Park receives noise from the overflight of aircraft.

The parks having the lowest noise levels were those located in the southwest portion of the City. The topography of this portion of the City may be partially attributable for the recorded levels of noise since areas of varying topography absorb more sound than flat areas.

The park with the lowest noise level was found to be Sea Aire (golf course) which showed an average reading of 50.5 dBA (see Map 4). This golf course, owned and operated by the City, also has a small adjacent park area. Los Arboles Park also had a low ambient with a reading of 51.5 dBA. El Retiro and Victor Parks, with ambients of 54 dBA, must also be considered quiet parks since they are under the standard for adjacent residential areas.

Noises from sources within the parks cannot be ignored. The most serious park generated noises are those from public address systems. Permits are required for their use at the present time.

Schools

Schools located along major arterials are recipients of auto traffic noise, particularly during rush hours (Map 5). An analysis of existing and projected noise impacts on the schools along Prairie-Madrona is contained in the Environmental Impact Report for the Prairie-Madrona Street Improvement Project (Report EA 73-79, City of Torrance). This analysis may be used as a paradigm for other schools along heavily traveled thoroughfares (example: Sepulveda Elementary on Carson Street; Edison Elementary on 182nd Street; etc.).



Source: Torrance City Planning Dept., 1973



Of the four public high schools, North and Torrance High Schools were found to have high noise levels within some of the classrooms. At North High, classrooms fronting on 182nd Street had a noise ambient of 58 dBA, and at Torrance High classrooms adjacent to Carson Street had a 58 dBA noise ambient also. It should be noted that these noise levels occurred at non-peak traffic hours and therefore, noise ambients would be higher during hours of peak traffic volumes on those streets.

Schools located in the southern part of the City and especially those in the Southwest and Riviera sections, must contend with noise emanating from aircraft traffic. The peak hours for local aircraft activity occur between 9:30 a.m. to 11:00 a.m. and from 2:00 p.m. until sunset on weekdays. Jet traffic from Los Angeles International Airport begins earlier in the morning and remains rather sporadic throughout the day. The flight patterns of aircraft over the City of Torrance are shown on Map 6.

In order to determine the impact of this noise source within the classroom and of the outdoor playground, monitoring was performed for 3 hours at Calle Mayor and Arnold Elementary Schools, which were determined the most seriously impacted schools. Monitoring was performed with windows and doors open, a normal situation since the rooms are not equipped with air conditioning units.

It was found that in classrooms oriented onto the activity field, noise levels from aircraft ranged from 50 to 69 dBA. Ground barriers did not appear to provide an advantage against this source of noise.

In a period of two hours, seventeen occurrences of noise levels over 50 dBA were observed. Of these, seven were from jet aircraft. It was observed that this type of aircraft has a tendency to maintain a high noise level for a longer period of time than that of the local aircraft. When local aircraft activity did have a high noise level (above 50 dBA) the aircraft was flying directly over the school or flying at what appeared to be a low altitude.

To determine aircraft noise levels outside the classrooms, monitoring was performed between 2:00 p.m. and 3:00 p.m. on the activity field adjacent to the Calle Mayor Elementary School. There were fifty-one aircraft in the vicinity of the school during the 60 minute monitoring period. Three were jet planes and forty-eight were local aircraft. Only aircraft noise over 50 dBA was recorded. Sporadic noise levels from aircraft activity ranged from 54 to 79 dBA.⁶ For the most part, aircraft did not fly over this school, but kept a regular pattern to the northeast of the school.

Hospitals and Convalescent Homes

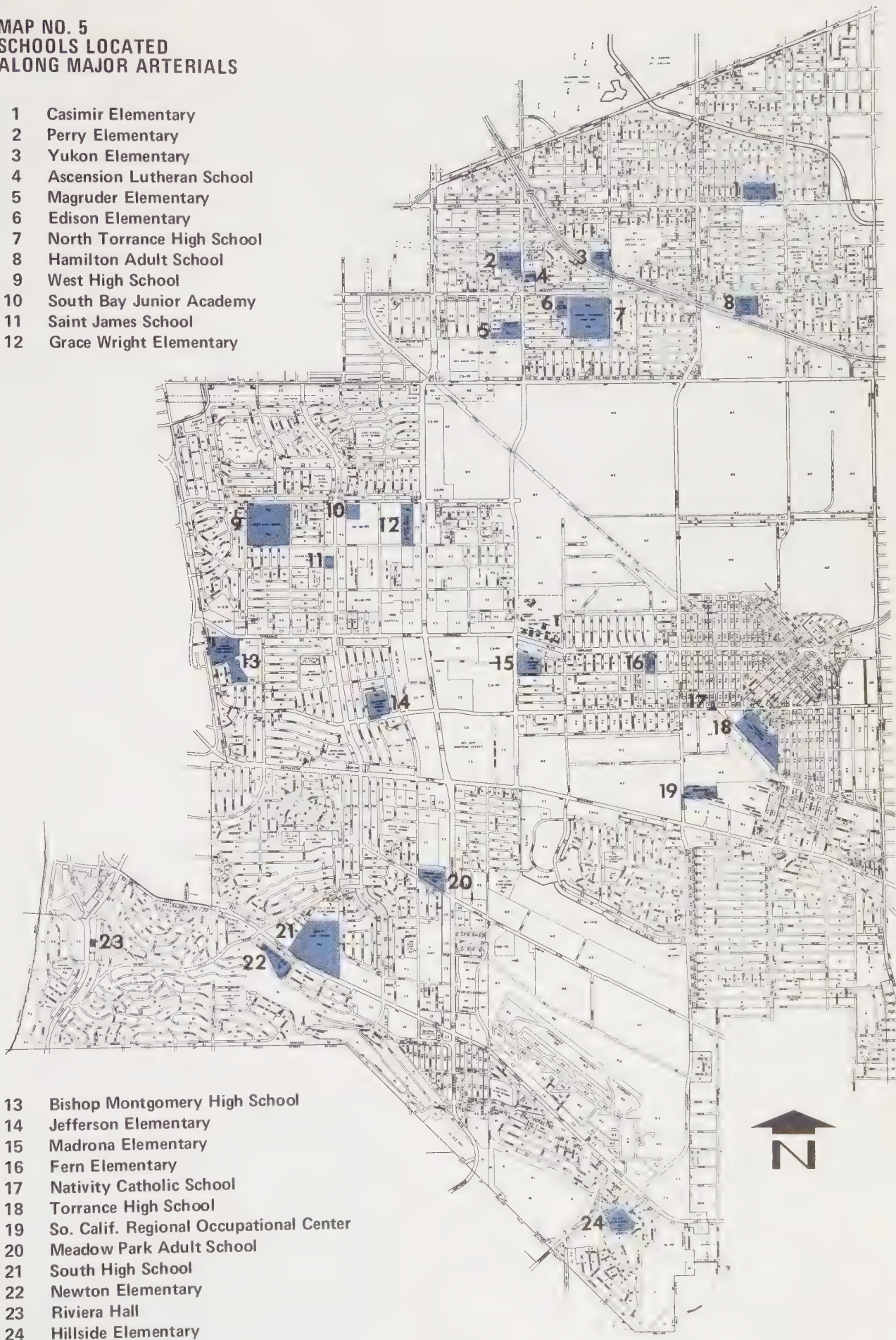
Facilities in the H-M-D zone, such as Little Company of Mary, Torrance Memorial, Del Amo and Torrance Convalescent Hospitals, all operate under noise limits specified by Section 91.38.7 of the Torrance City Code which requires special acoustical insulation in order to maintain an acceptable interior noise level for facilities in this zone. Central air conditioning in conjunction with sealed windows greatly reduces the problem of noise transmission from traffic and aircraft, especially in facilities located on Torrance and Lomita Boulevards. Little Company of Mary and Torrance Memorial Hospitals have effectively used deep setbacks to reduce noise levels emanating from traffic sources. Ambients as high as 68 and 70 dBA at the street curb are reduced to as low as 58 and 60 dBA at the front of the hospitals because of these setbacks. Del Amo Hospital has a low exterior ambient of 53 dBA for day and 45 dBA for night and this may be attributed to its location behind Torrance Memorial Hospital which acts as a barrier for noise emanating from Lomita Boulevard.

Interior noise levels in these hospitals can be assumed to be exceptionally low since even normal acoustical insulation can reduce noise within buildings by 15 dBA.

Convalescent homes such as Rose Manor, Royalwood, Del Amo Gardens, Emerald and Earlwood, located in residential areas, were quiet with ambients ranging from 48 dBA to 53 dBA. Central Torrance and West Torrance convalescent homes were impacted with traffic noise. Exterior noise levels were greater than 65 dBA.

**MAP NO. 5
SCHOOLS LOCATED
ALONG MAJOR ARTERIALS**

- 1 Casimir Elementary
- 2 Perry Elementary
- 3 Yukon Elementary
- 4 Ascension Lutheran School
- 5 Magruder Elementary
- 6 Edison Elementary
- 7 North Torrance High School
- 8 Hamilton Adult School
- 9 West High School
- 10 South Bay Junior Academy
- 11 Saint James School
- 12 Grace Wright Elementary



- 13 Bishop Montgomery High School
- 14 Jefferson Elementary
- 15 Madrona Elementary
- 16 Fern Elementary
- 17 Nativity Catholic School
- 18 Torrance High School
- 19 So. Calif. Regional Occupational Center
- 20 Meadow Park Adult School
- 21 South High School
- 22 Newton Elementary
- 23 Riviera Hall
- 24 Hillside Elementary



Traffic Analysis

The State requires that noise contours be mapped along major arterials showing the extent of noise impacts in 5 dBA increments down to a 65 dBA contour. In the vicinity of hospitals, rest homes, and outdoor recreation areas, these contours should be continued down to 45 dBA.⁷ These maps are not useful in determining actual impacts on specific properties but rather serve as a graphic delineation of the patterns of these noise impacts. By viewing these patterns the City can set priorities for its noise abatement projects.

Map 7 shows the general area covered by the 65 dBA noise contour as well as noise sensitive facilities lying within or immediately adjacent to this contour. The contour maps are not included in this document due to their becoming illegible when reduced to an amenable size; they are instead on display in the City Planning Department for public review.

City staff is currently enhancing the contour maps to show noise levels down to 60 dBA for use in implementing Article 25 of the California Administrative Code (see Appendix E).

The noise contours along major arterials were determined through a method provided by the Los Angeles County Road Department and are discussed specifically in Appendix B. This method provides a means of determining noise levels along arterials at peak traffic hours, i.e., levels exceeded only 10% of a 24 hour period.

Noise contouring along major arterials produced the fol-

lowing results (see Map 7):

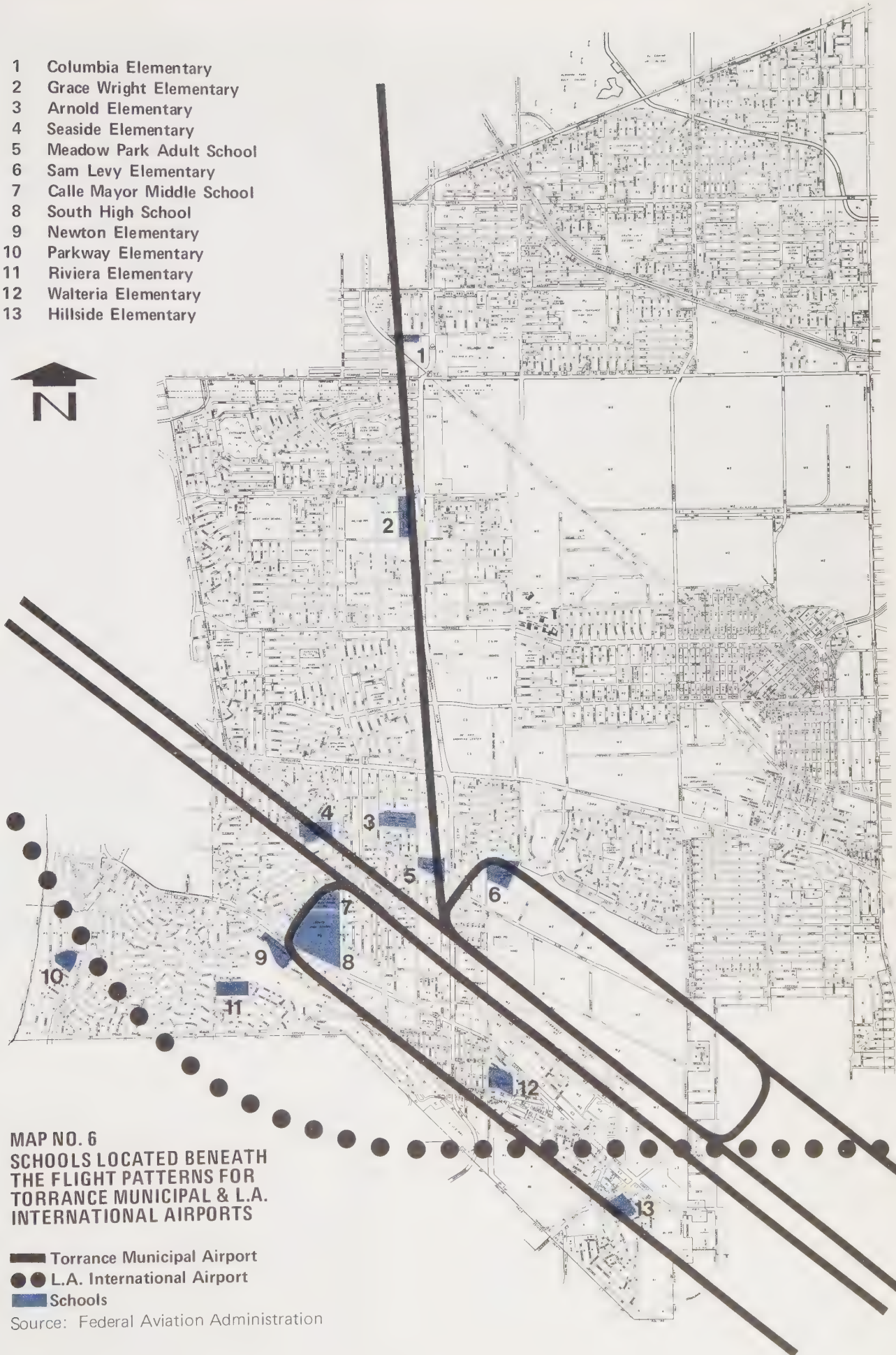
1. Residences, parks, schools, convalescent homes, and open space fronting on the following arterials are impacted with noise considerably above 65 dBA: Hawthorne Boulevard, Crenshaw Boulevard, Pacific Coast Highway, Western Avenue, Sepulveda Boulevard, Carson Street, Torrance Boulevard, 190th Street, Artesia Boulevard, Madrona Avenue, and Del Amo Boulevard.
2. Areas adjacent to the San Diego Freeway are impacted with noise levels above 65 dBA.
3. Hawthorne and Crenshaw Boulevards have the highest noise levels with traffic noise levels above 90 dBA being recorded 5 to 15 feet out from the edge of the right-of-way.
4. Noise levels decline rapidly where structures equivalent to or higher than 10 feet are present, such as one story single family homes.
5. Where there are open areas, such as parks, schools, playgrounds, etc., noise levels remain high for considerable distances.

The Los Angeles County Road Department has prepared projections of future traffic volumes along a number of arterials in Torrance. If these traffic volume projections are correct, noise can be expected to increase along these arterials. Table 2 (page 18) shows the projected increase in traffic volumes along various portions of local arterials and the expected increase in noise levels by 1990.

This table shows that noise levels along various arterials will not be considerably higher in the future. However, it is important to recognize the cumulative effect these increases will have on ambient noise levels in the City. Cumulatively, these increases will in all probability cause ambient noise levels in adjacent residential areas to increase above the daytime standard of 50/55 dBA, depending upon location, if mitigating measures are not taken.



- 1 Columbia Elementary
- 2 Grace Wright Elementary
- 3 Arnold Elementary
- 4 Seaside Elementary
- 5 Meadow Park Adult School
- 6 Sam Levy Elementary
- 7 Calle Mayor Middle School
- 8 South High School
- 9 Newton Elementary
- 10 Parkway Elementary
- 11 Riviera Elementary
- 12 Walteria Elementary
- 13 Hillside Elementary



MAP NO. 6
SCHOOLS LOCATED BENEATH
THE FLIGHT PATTERNS FOR
TORRANCE MUNICIPAL & L.A.
INTERNATIONAL AIRPORTS

- Torrance Municipal Airport
- L.A. International Airport
- Schools

Source: Federal Aviation Administration

TABLE 2
PROJECTED TRAFFIC VOLUMES AND NOISE LEVELS FOR SELECTED MAJOR ARTERIALS

<u>Arterial</u>	<u>Existing Noise Levels⁽¹⁾</u>	<u>Projected Traffic Volume Increase</u>	<u>Projected Noise Increase</u>
CRENSHAW Between PCH and Del Amo	90 dBA	9,000	5 dBA
Between Del Amo and Redondo Beach Blvd.	90 dBA	15,000	3 dBA
PACIFIC COAST HIGHWAY Between P.V. Blvd. and Western	85 dBA	6,000	2 dBA
SEPULVEDA Between Western and Prospect	85 dBA	11,000	3 dBA
LOMITA Between Crenshaw and Hawthorne	80 dBA	6,000	2 dBA
CARSON Between Western and Ocean	75 dBA	6,000	3 dBA
TORRANCE Between Western and Prospect	80 dBA	8,000	3 dBA
DEL AMO Between Prospect and Hawthorne Blvd.	75 dBA	3,000	2.5 dBA
Between Hawthorne Blvd. and Western	75 dBA	11,000	13 dBA

(1) Maximum levels at edge of pavement for existing streets.

NOTE: There is no direct correlation between increased traffic volumes and increased decibel levels because present traffic volumes on various arterials differ. In other words, if the present traffic volume is high on a particular arterial a few thousand more automobiles will not have as much of an impact as they would on an arterial with a presently low traffic volume.

Source: Los Angeles County Road Department

implementation

As pointed out in the findings, noise pollution does exist in Torrance, and will increase in the future if mitigating measures are not taken to reduce present and future noise.

There are a number of ways of reducing noise. In the following section, the measures the City can implement to reduce noise and where those measures would be most viable are discussed.

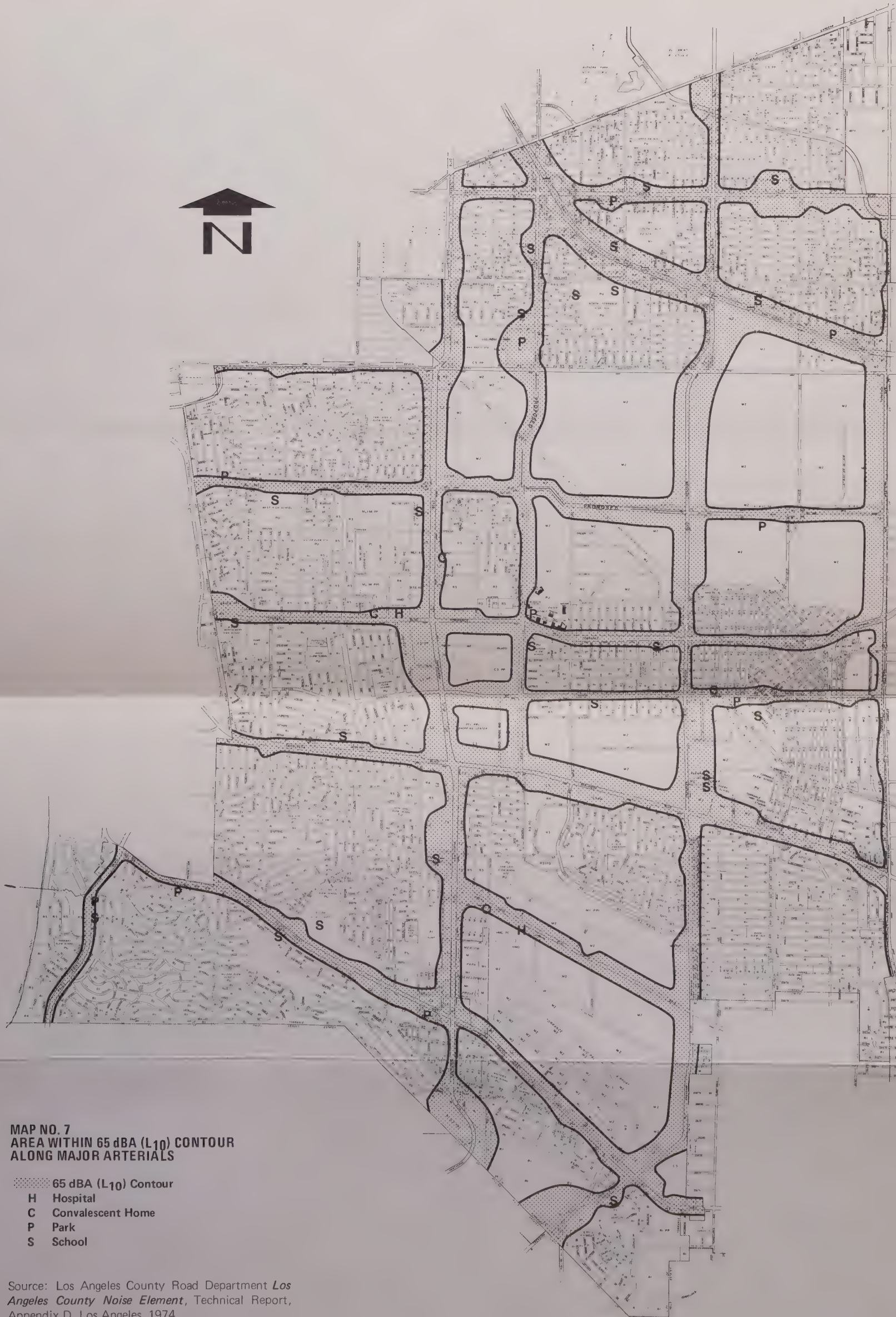
Insulation

Construction standards should be established that require acoustical insulation for all new residential developments which will be adjacent to heavily traveled arterials or industrial areas. Future developments in alignment with aircraft

flight patterns should also be required to have acoustical insulation. This measure would help to achieve acceptable interior noise levels (see Policy 9).

Buffering

Buffering is an effective method of reducing noise. Masonry walls, landscaping or a combination thereof can be used to attenuate noise. Brick walls 10 feet high have been found to reduce noise by 10 dBA.⁸ A reduction of 10 dBA is equivalent to reducing noise in half.⁹ Trees, plants, and ground cover, when placed between the source of noise and the receiver reduce noise by absorption, deflection, reflection, and diffraction. There is little opportunity in Torrance for the abatement of noise impacts via landscape buffering. The most effective buffers that can be used in the City are masonry walls, however, landscaping needs to be used for aesthetic (psychological) purposes whereby the starkness of a masonry barrier can be relieved by trees and shrubs. Fur-



thermore, ground covers (grass, ivy, ice plant) can soften the impact of noise by the absorption of sound.

A possible method of buffering with only landscaping is to use berms with trees, shrubs, and ground covers.

Buffering can be considered one of the most viable means of reducing noise, since the City presently is almost totally developed. It is impossible to restrict development where development already exists or to require additional insulation in existing buildings. However, it should be noted that unacceptable noise levels cannot be eliminated by buffering alone, the other measures cited in this section should also be implemented.

Funding

One specific source of funding for the construction of noise barriers which is locally applicable, is the Federal Aid to Highways Act of 1970. This Act makes funds available for noise control along highways built with federal money. Based on the land use noise exposure standards contained in the Act and the noise contours prepared for the San Diego Freeway, it appears that numerous locations along the freeway, e.g., La Carretera Park, Yukon Elementary School, etc., are eligible for such aid. Therefore, the City of Torrance should actively pursue funding under this Act, particularly in light of a current proposal to add additional lanes to the San Diego Freeway through the City of Torrance. Other possible sources of funding for noise attenuation projects are Section 216 of the California Streets and Highways Code and the Housing and Community Development Act of 1974.

Building Design

Noise can be minimized by the arrangement of developments on land abutting arterials, freeways, industrial land uses and other known sources of noise.

Developments such as single dwelling units should be placed on lots with the rear yard facing the known source of noise, whereby brick walls and landscaping may be placed along the rear of the lot between the dwelling and the noise source. The units should be placed as far forward on the lot as feasible, and functions within the dwelling that are least disrupted by noise should be placed at the rear.

The above design proposals should be integrated into the plot plan review process and utilized for development in areas where noise has been determined to be a problem.

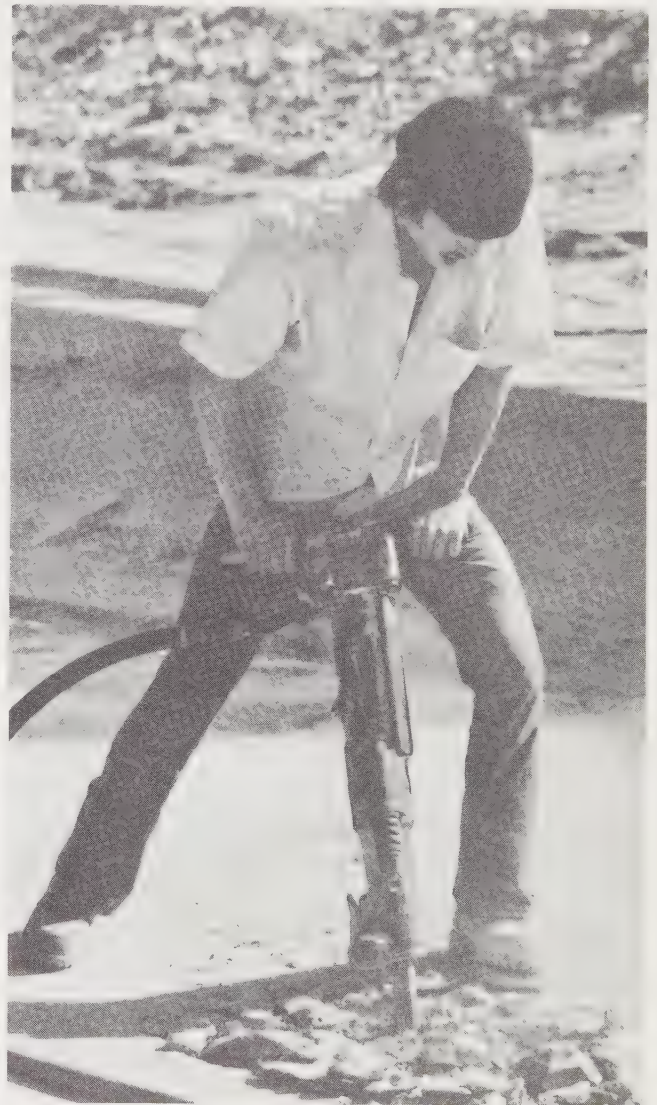
Land Use

The juxtaposition of compatible land uses should be used as a tool for minimization of noise problems. Furthermore, certain land uses can serve as noise buffers when placed between noise sensitive areas and noise sources. For example, warehousing or other storage type facilities can function as barriers between a noise source (a freeway) and a sensitive area (residences).

Power Machinery

Various types of mechanical devices can generate disturbing noise levels. These devices, such as air conditioning units,

car wash machinery, trash pick-up trucks, etc., should be required to have sound insulation or to have some other type of noise reduction devices installed.



Certain types of machinery such as lawnmowers, mini-cycles, power equipment, which produce loud noise should be covered by local ordinances on noise abatement; the City should establish policies in support of proposed Federal and State legislation that would require noise muffling devices on such machinery. The possibility of a local restriction on hours of operation should be considered.

Noise Ordinance

The City should maintain a workable and reasonable noise ordinance through periodic review. Such reviews should be conducted in order to account for changes in the local noise environment. In order to ascertain these changes, ambient noise levels should be reassessed at all monitoring points used in collecting data for this document on a biennial basis, at a minimum. Finally, the Environmental Quality Commission should use the data presented in this report to evaluate the adequacy of the existing noise ordinance in relation to stationary sources, and to propose changes as deemed necessary.

Motor Vehicle Noise

The State of California has established noise emission standards for all motor vehicles operated within the state (Table 3). Standards have also been established for all new motor vehicles being sold within California (Table 4). The enforcement of these standards is primarily a responsibility of the California Highway Patrol. However, in reality, if effective enforcement is to occur then it must be locally implemented. The California Vehicle Code makes adequate provision for control of vehicular noise. The problem appears to lie in having adequate police department personnel at the local level to enforce the existing laws. While continuous monitoring of vehicular noise is unrealistic, the City should initiate a program for periodically monitoring vehicle noise emissions at random locations using methods prescribed in the California Vehicle Code.

**TABLE 3
VEHICULAR NOISE LIMITATIONS⁽¹⁾**

Vehicle Type	Effective Date		dBA ⁽²⁾	
	Before	After	35mph	35mph
Motor Vehicle or combination of Vehicles towed (gross weight 6000+)	1973	1973	88	82 ⁽³⁾ 90
Motorcycle			86	
All other Motor Vehicles or combination of Vehicles towed			82	77 ⁽³⁾ 86
			76	74 ⁽³⁾ 82

(1) No person shall operate either a motor vehicle or combination of vehicles of a type subject to registration at any time or under any condition of grade, load, acceleration or deceleration in such a manner as to exceed these noise limits for the category of motor vehicles within the speed limit specified.

(2) Noise limitations shall be based on a distance of 50 feet from the center of the lane of travel within the speed limit specified.

(3) Vehicle noise limits within a speed zone of 35 mph or less on level streets, or streets with a grade not exceeding plus or minus 1 percent. Measurements shall not be made within 200 feet of any intersection controlled by an official traffic control device, or within 200 feet of the beginning or end of any grade in excess of plus or minus 1 percent. Measurements shall be made when it is reasonable to assume that the vehicle flow is at a constant rate of speed, and measurement shall not be made under congested traffic conditions which require noticeable acceleration or deceleration.

Source: Section 23130 and 23130.5 of the California Vehicle Code.

**TABLE 4
MOTOR VEHICLE NOISE STANDARDS⁽¹⁾
(Applies to New Motor Vehicles)**

Vehicle Type	MANUFACTURED		dBA
	After	Before	
Motorcycle	1970		92
	1969	1973	88
	1972	1975	86
	1974	1978	80
	1977	1988	75
	1987		
Motor Vehicle (Gross Weight 6000+)	1967	1973	88
	1972	1975	86
	1974	1978	83
	1977	1988	80
	1987		70
All Other Motor Vehicles	1967	1973	86
	1972	1975	84
	1974	1978	80
	1977	1988	75
	1987		70

(1) No person shall sell or offer for sale a new motor vehicle which produces a maximum noise exceeding these noise limits at a distance of 50 feet from the centerline of travel under test procedures established by the State.

Source: Section 27160 of the California Vehicle Code.



appendices

APPENDIX A

Random Monitoring Methodology

A portable, battery-powered sound level meter, type 2205, was used for monitoring sound levels throughout the City primarily, because of its availability and its effectiveness in measuring almost any noise situation. The "A" Scale was selected on this meter because:

1. It most accurately expresses a human's perceived loudness of noise;
2. A large accumulation of data is available and expressed in the "A" scale; and
3. The "A" Scale reading can be taken from a standard sound meter without further calculations, making the readings a simple procedure and allowing effective enforcement of standards. It is recommended for future testing, however, that a more sophisticated meter with a graphic level recorder or a magnetic tape recorder be used in order to get a listing of the number of times a certain level of noise is reached within a particular environment in a 24 hour period; thus a better description of the noise environment, or the noise exposure of a particular site can be portrayed.

The procedure used to ascertain the ambient noise of each neighborhood was as follows: The regions relating to residential, commercial and industrial land uses were broken down into smaller increments by using census tracts as designated boundaries for neighborhoods. When there were conspicuous boundaries within particular census tracts between different land uses, e.g., industrial and residential, commercial and residential, the census tract was further broken down to show these uses. Four or five location points within each census tract were selected to obtain a reading of the noise environment at those particular points. To find the noise for a neighborhood, readings were taken from the individual location points.

The actual monitoring procedure was as follows:

1. The noise meter was calibrated at the beginning of each reading period.
2. Upon arrival at the specific site to be monitored, the work sheet was filled out to reflect the unique characteristics of the site, e.g., weather and wind conditions, time of reading, land use, and whether there were barriers about the site which might affect the reading. At this point, everything was recorded with the exception of the meter reading.
3. The actual monitoring, lasting approximately ten minutes for daytime neighborhood readings and from two to five minutes for night neighborhood readings was carried out next. In order to assess the noise level each location point would receive over a long period of time, the ambient level was determined by selecting the modal number within the range most consistently registered on the sound meter. In essence, this numerical indicator represents the background noise level in a community. Noise from various sources which caused unusual peaks in the sound level were also noted.
4. At the end of the reading period, the meter was again checked for calibration and the readings were plotted on the neighborhood map (see Map 1).

APPENDIX B

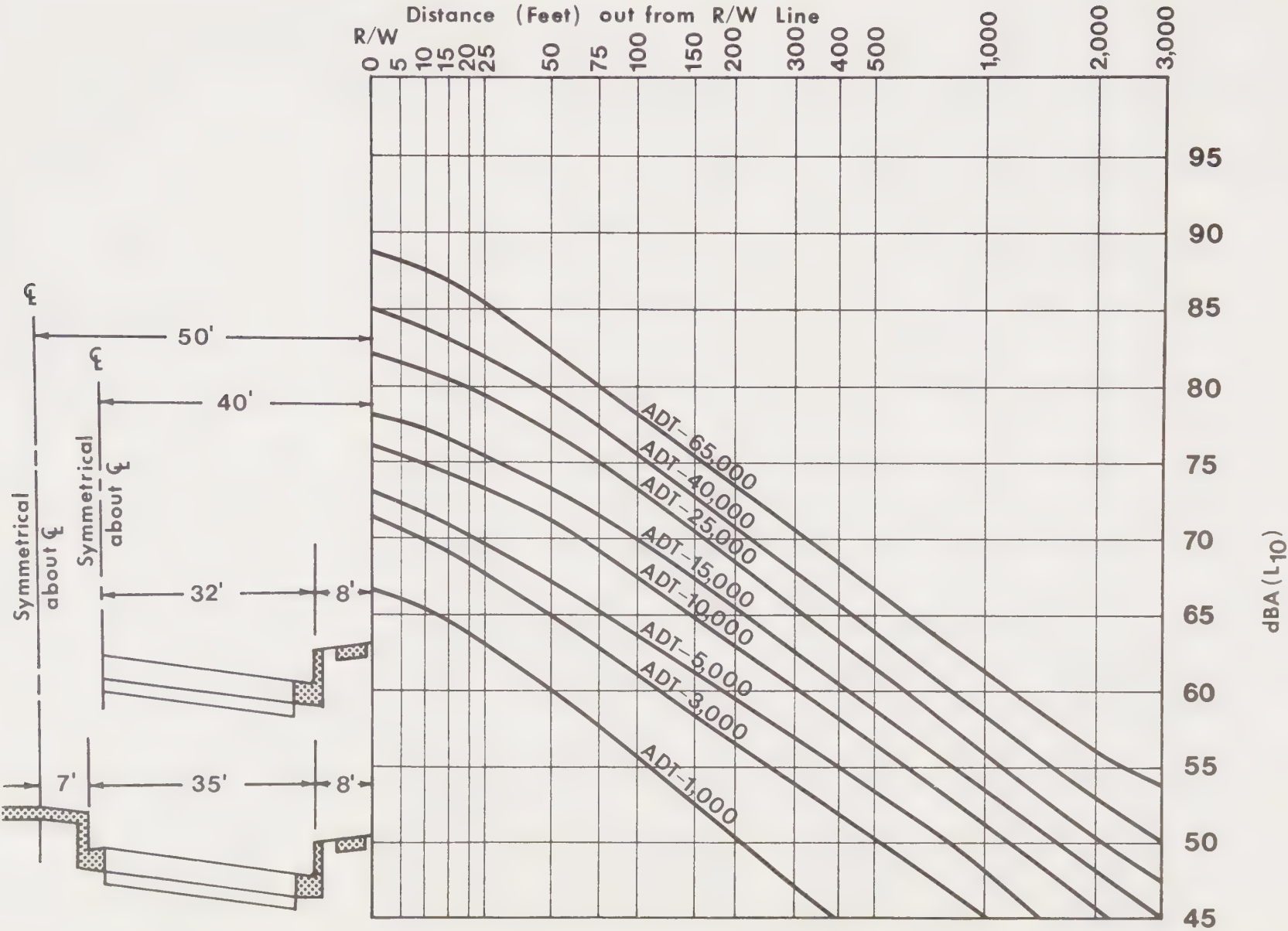
Traffic Noise Contour Methodology

The method utilized for the traffic noise contours was provided by Los Angeles County Road Department.¹⁰ This method employs a series of graphs depicting traffic characteristics and other factors affecting noise levels along arterials (see graphs on the following pages). The following steps are involved:

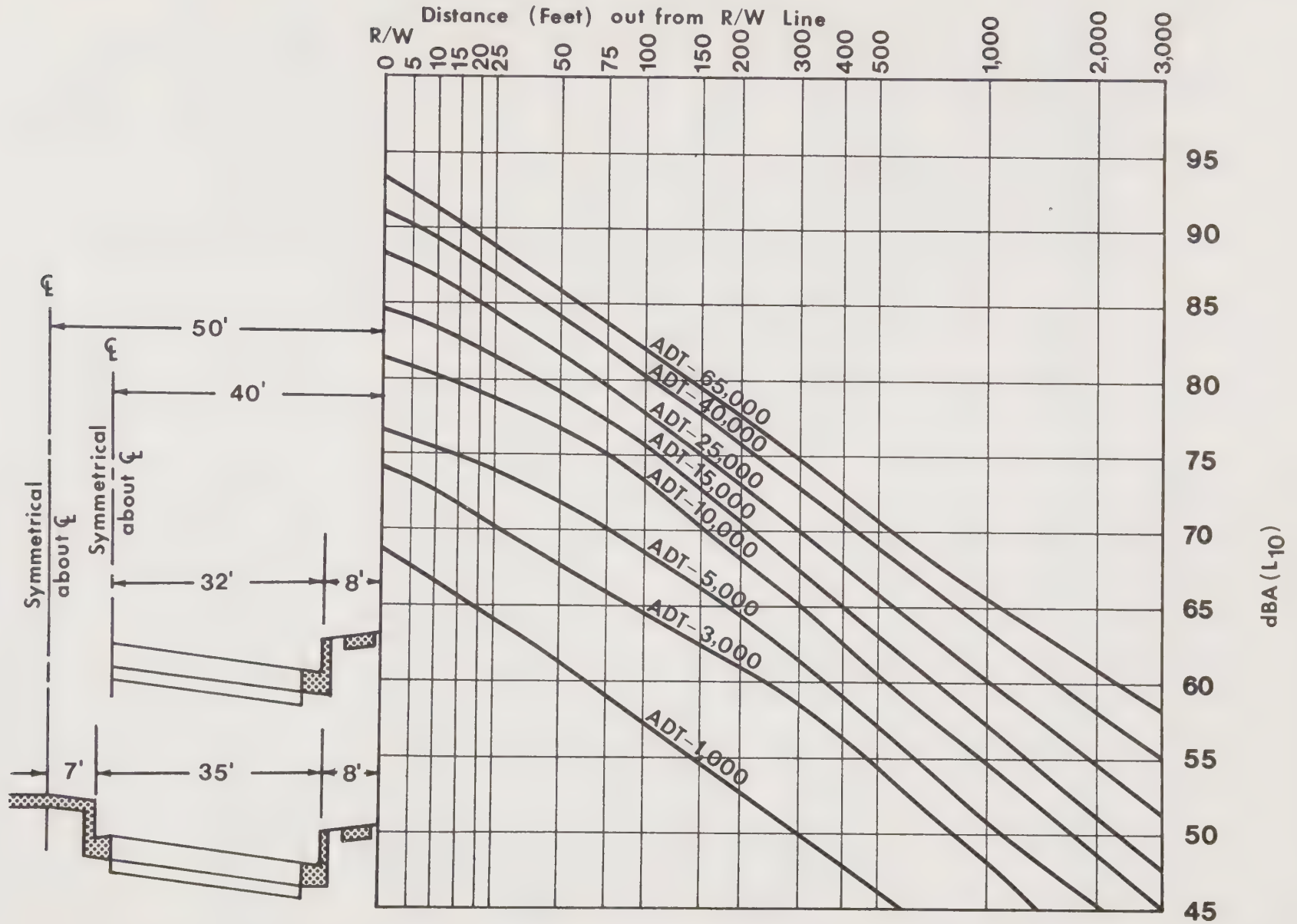
1. Select the graph corresponding to the truck percentage for the street to be investigated.
2. Select the distance from the right-of-way line on the abscissa of the graph.
3. Move vertically to intersect the known average daily traffic line as indicated on the y-axis.
4. Move horizontally to the right to determine the noise level.
5. Once the noise level is determined, make corrections using method discussed in steps 7 through 9 to account for factors which are not equal to the following assumptions:
 - A. Four lane highway on level terrain.
 - B. Center of nearest automobile is 20 feet from edge of right-of-way.
 - C. Average speed of traffic is 35 m.p.h.
 - D. Peak hour traffic volume equals 10% of the average daily traffic.
 - E. Observer is within 1,000 feet of an intersection with traffic signals.
6. Once determination has been made of differences between the above assumptions and the actual arterial being contoured, then select the graphs that depict those differences.
7. Select the desired distance from the right-of-way line and enter the graph at this point.
8. Move vertically to intersect with roadway condition desired, and read difference between this condition and *control condition* on graph.
9. Add or subtract (whichever is necessary), the factor difference from the originally determined noise level.

It is important to note that noise levels obtained through this method are peak hour traffic noise levels, i.e., levels exceeded only 10% of a 24 hour period. Furthermore, the Torrance Planning Department considered structures such as single family dwelling units, lining arterials were equivalent to continuous 12 foot brick wall barriers even though occasionally there were breaks between the structures (side yards, collector streets, etc.). However, major breaks (openings of 200 feet or more) between structures were determined to allow noise to travel greater distances from the arterials, and were contoured accordingly.

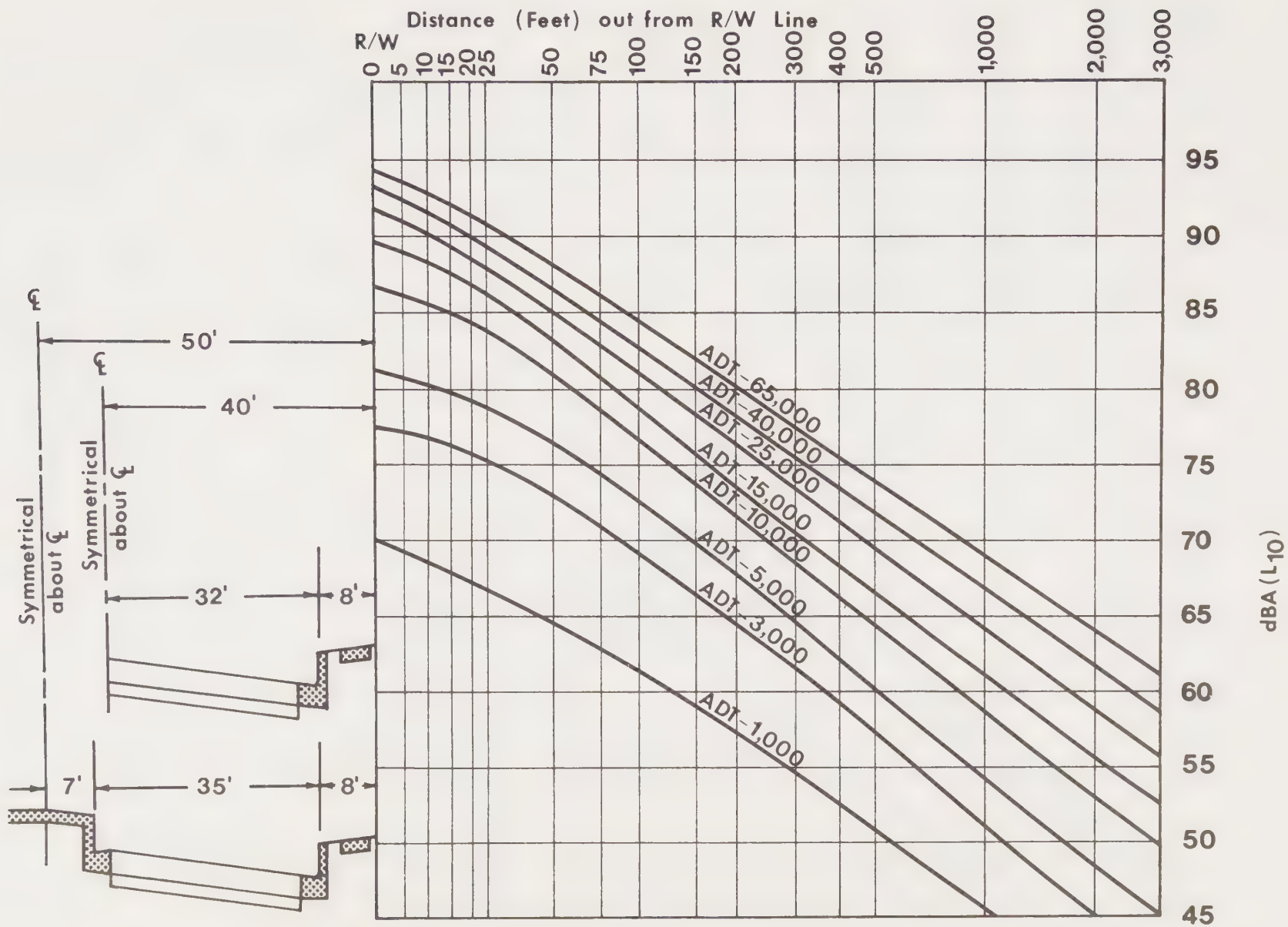
MASTER PLAN HIGHWAY-2% TRUCKS



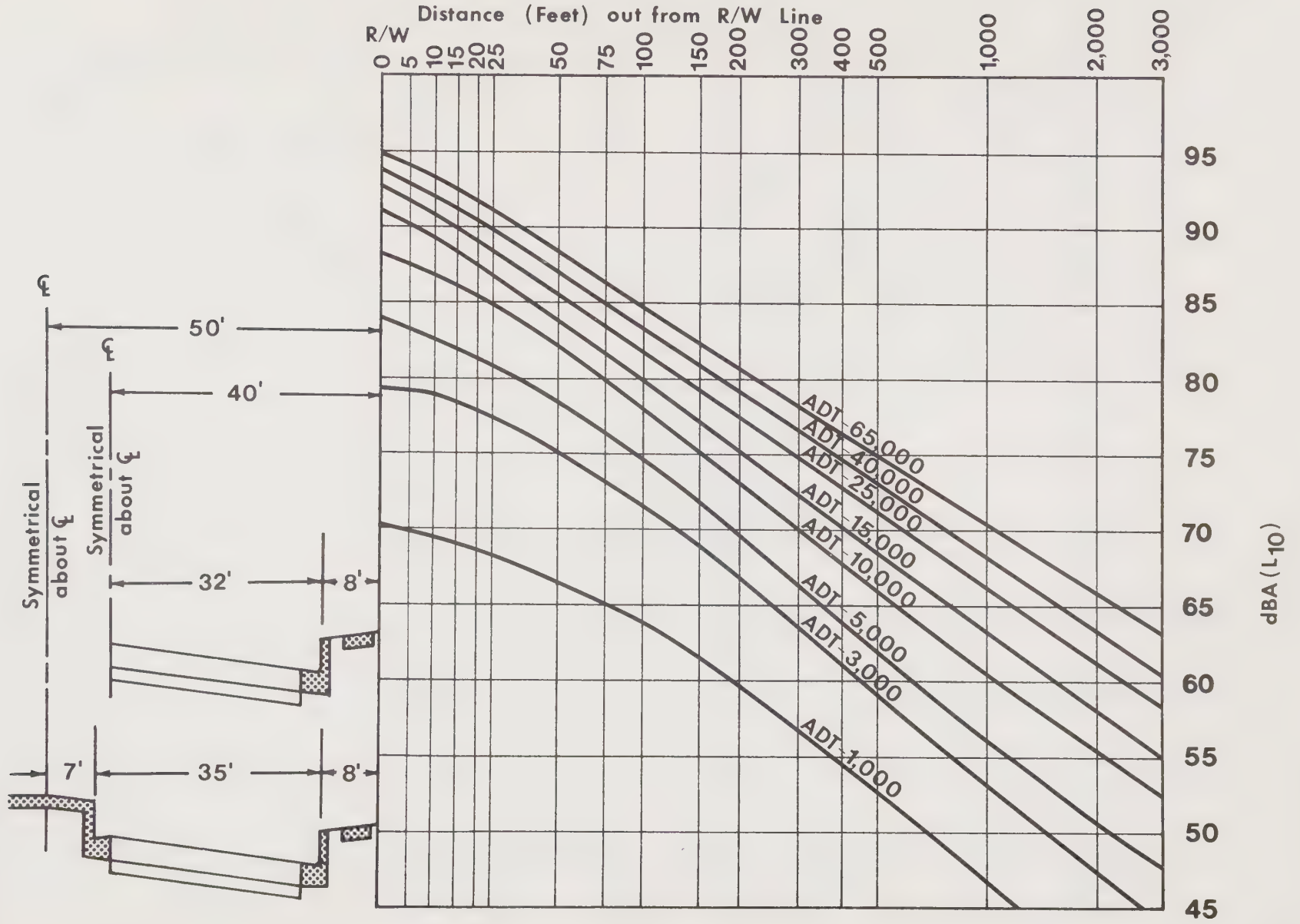
MASTER PLAN HIGHWAY - 5% TRUCKS



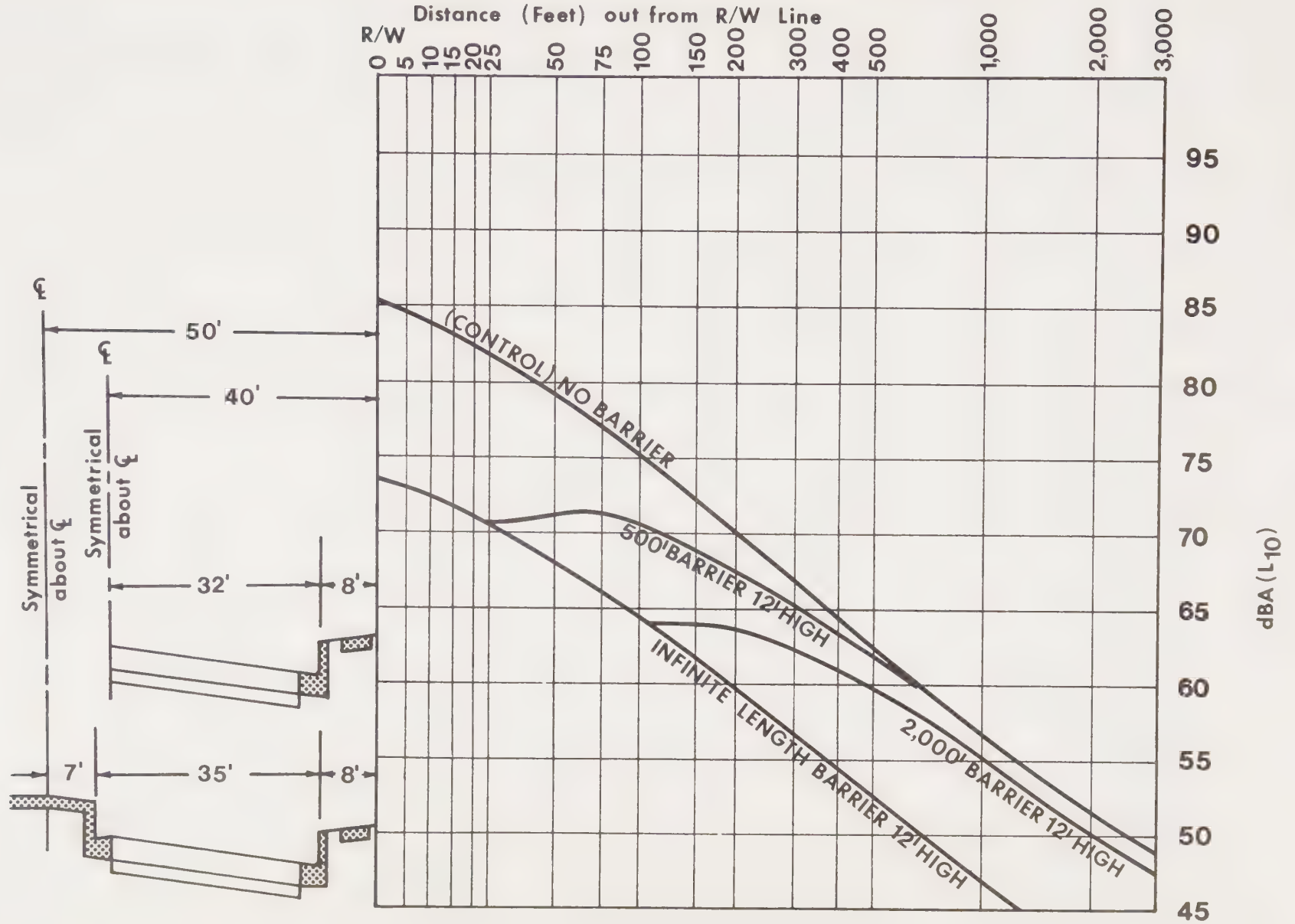
MASTER PLAN HIGHWAY - 10% TRUCKS



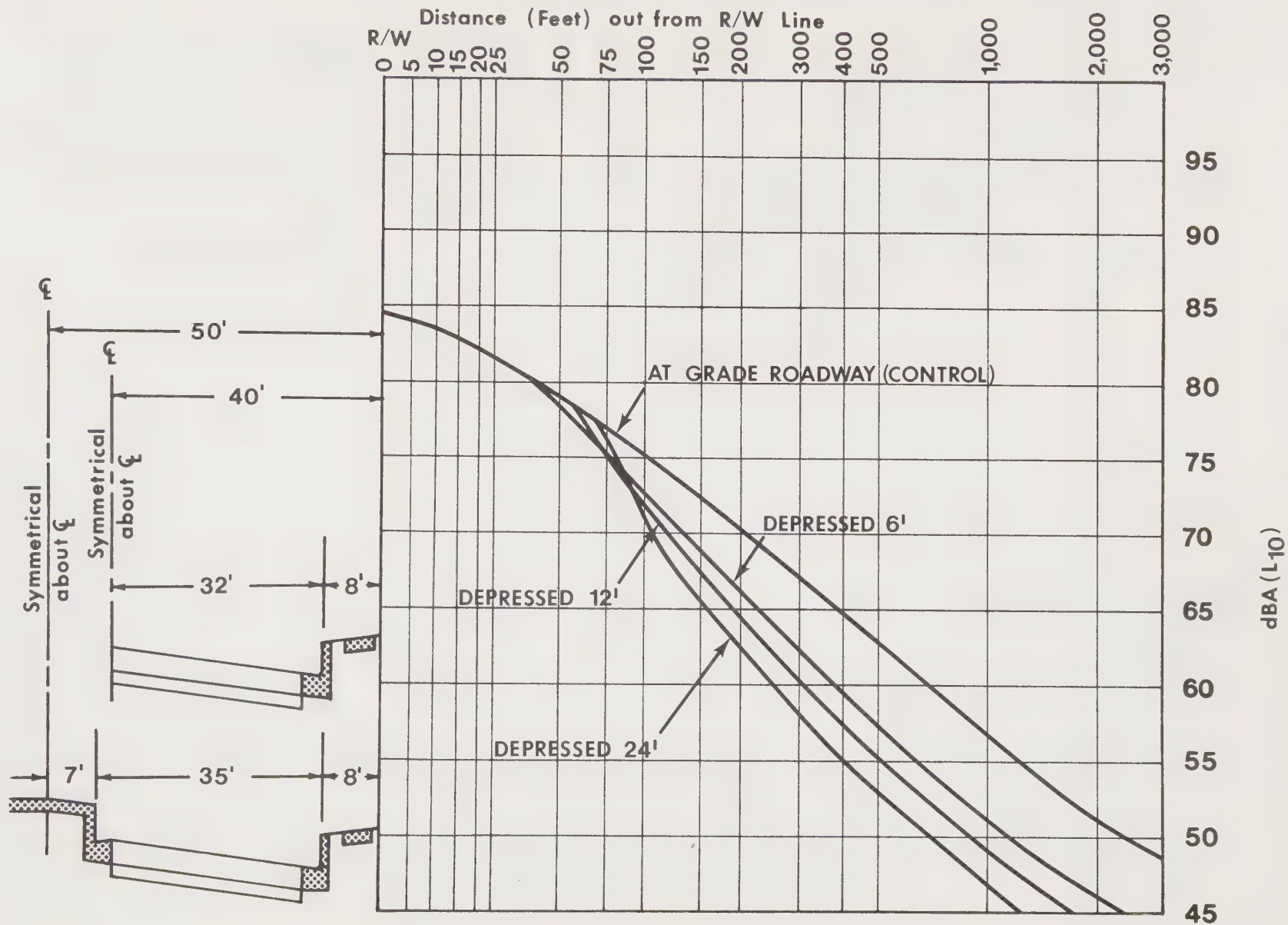
MASTER PLAN HIGHWAY-15% TRUCKS



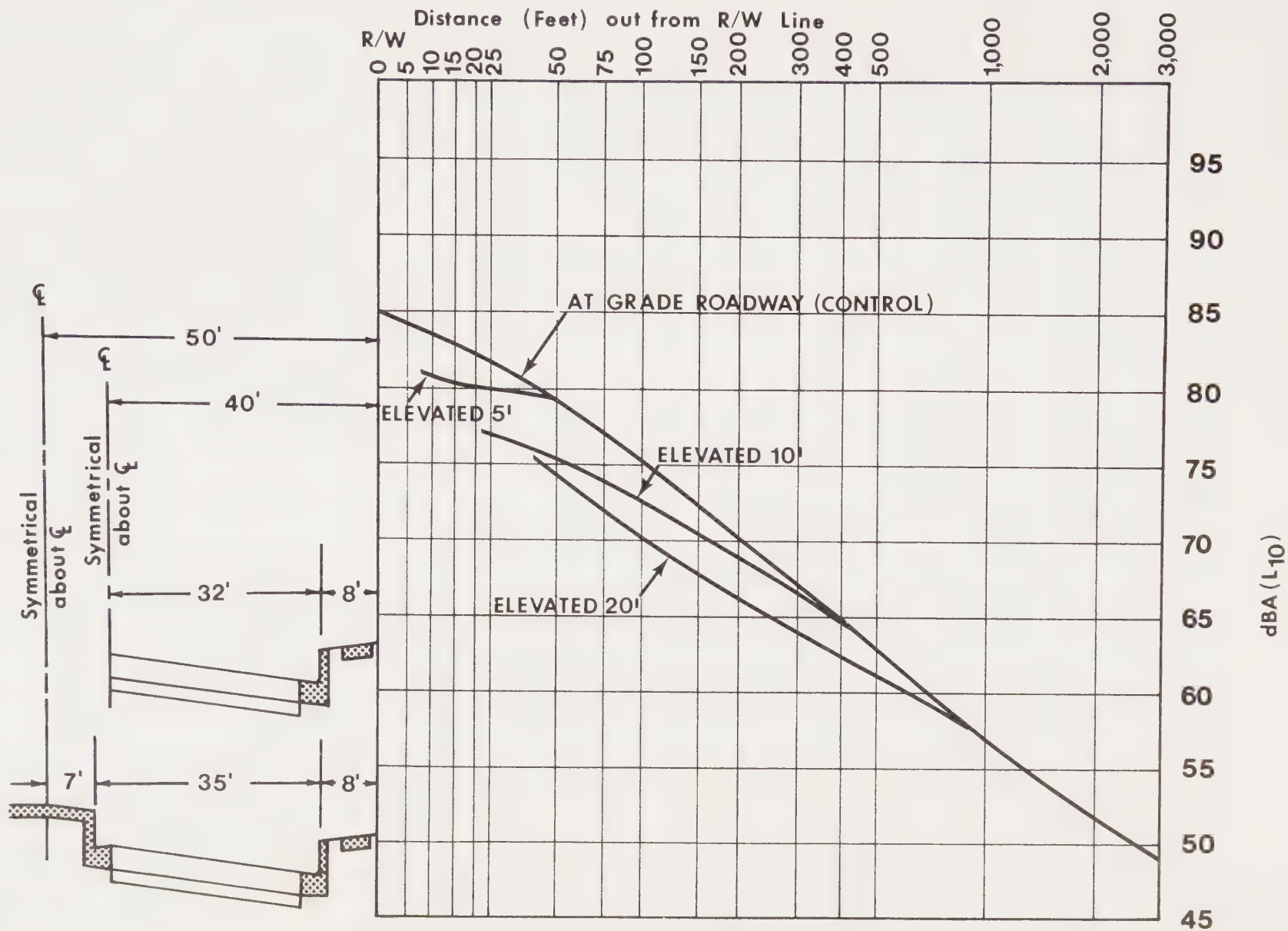
TYPICAL ARTERIAL HIGHWAY - BARRIER CORRECTION



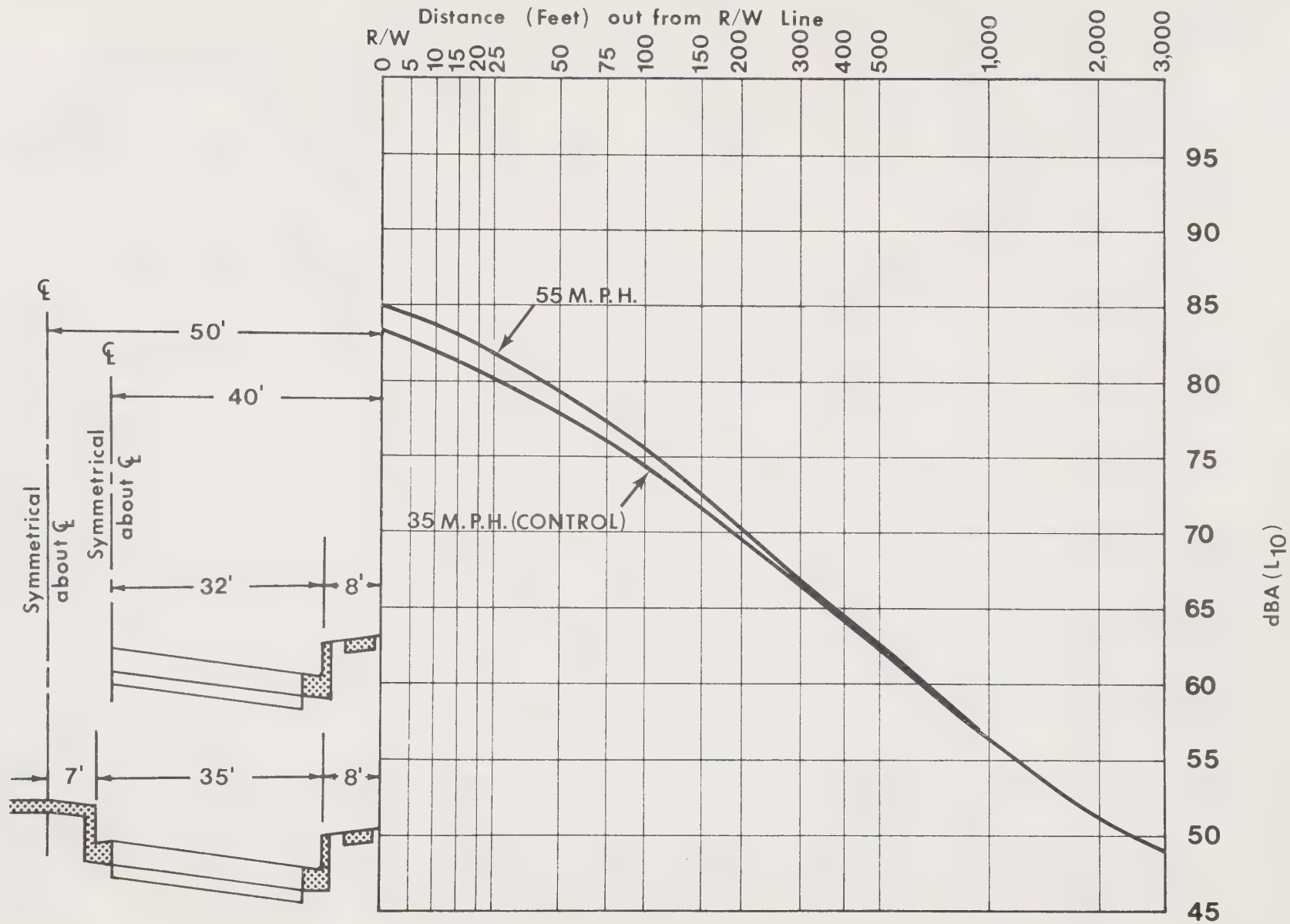
TYPICAL ARTERIAL HIGHWAY - DEPRESSION CORRECTION



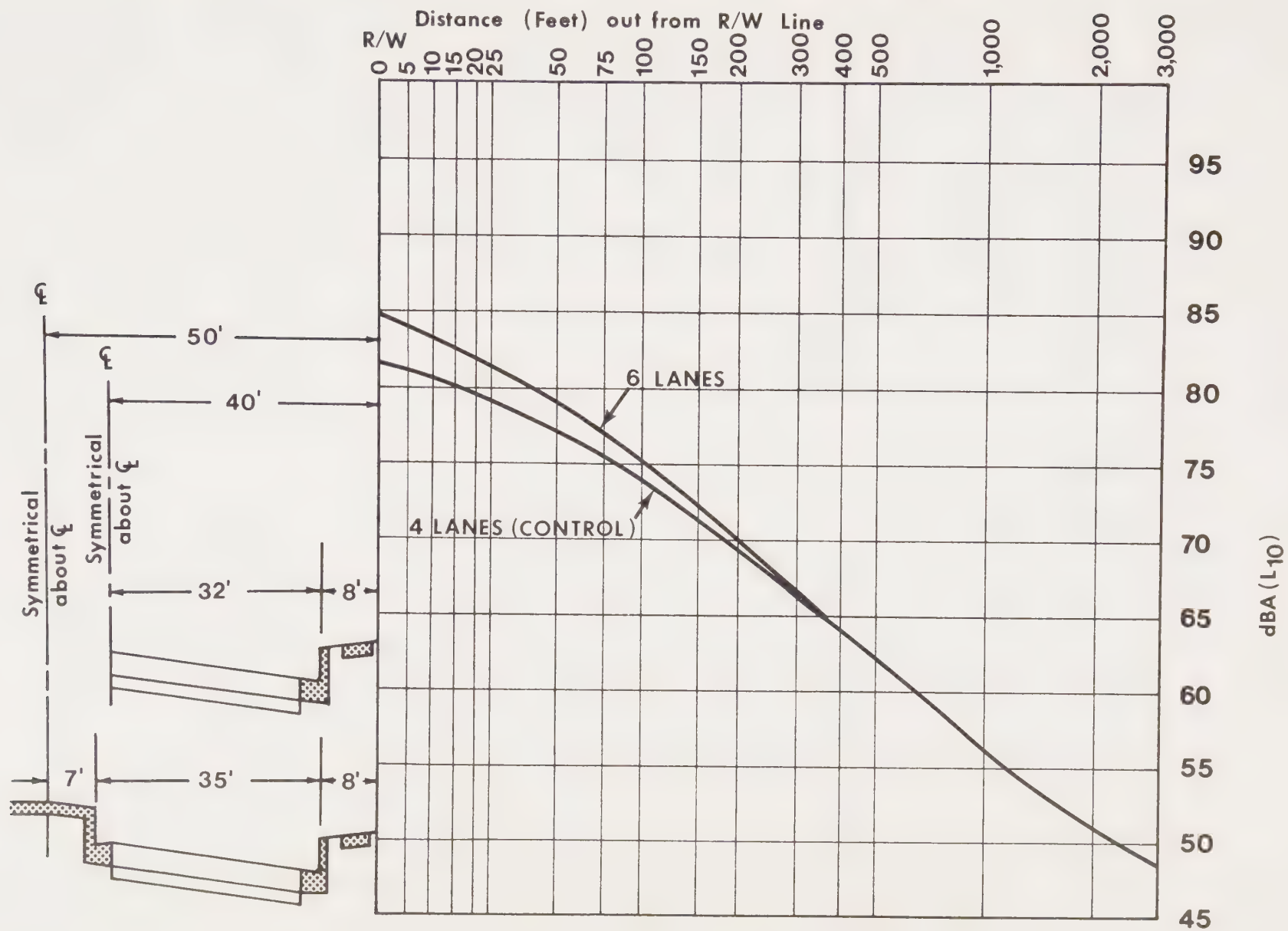
TYPICAL ARTERIAL HIGHWAY - ELEVATED CORRECTION



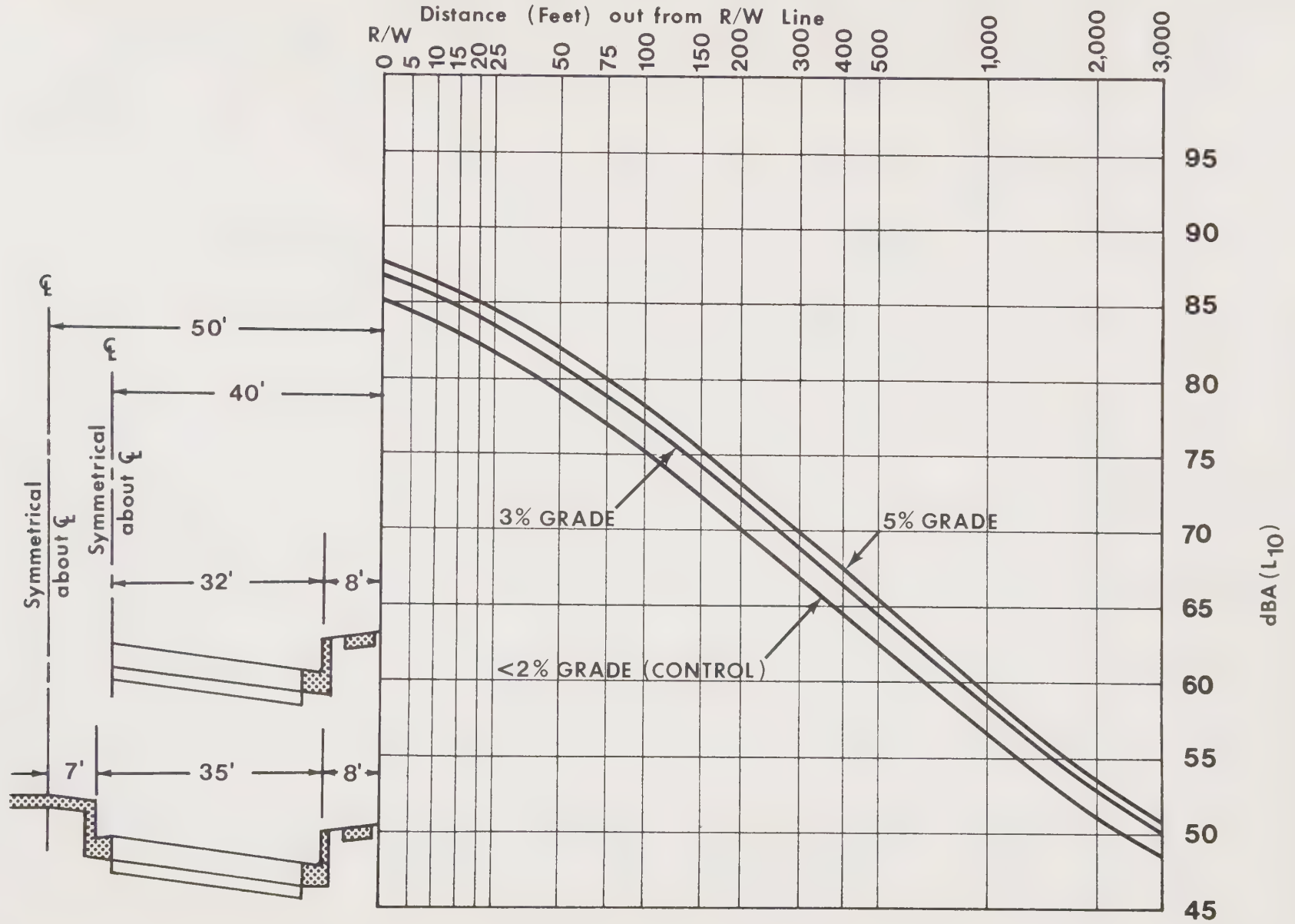
TYPICAL ARTERIAL HIGHWAY - VELOCITY CORRECTION



TYPICAL ARTERIAL HIGHWAY - LANE CORRECTION



TYPICAL ARTERIAL HIGHWAY - GRADE CORRECTION



TORRANCE MUNICIPAL CODE

CHAPTER 6 - NOISE REGULATION

(Added by 0-2170; Amended by 0-2211)

ARTICLE 1 - GENERAL PROVISIONS

SECTION 46.1.1. DECLARATION OF POLICY.

It is hereby declared to be the policy of the City to prohibit unnecessary, excessive and annoying noises from all sources subject to its police power. At certain levels noises are detrimental to the health and welfare of the citizenry and in the public interests shall be systematically prescribed.

SECTION 46.1.2. DEFINITIONS.

(Amended by 0-2466)

As used in this Chapter, unless the context otherwise clearly indicates, the words and phrases used in this Chapter are defined as follows:

a) Ambient noise is the all encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far, without inclusion of intruding noises from isolated identifiable sources.

b) Decibel (db) shall mean a unit of level which denotes the ratio between two (2) quantities which are proportional to power; the number of decibels corresponding to the ratio to two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

c) Emergency work shall mean work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from an imminent exposure to danger.

d) Noise level, in decibels, is the A-weighted sound pressure level as measured using the slow dynamic characteristic for sound level meters specified in ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof. The reference pressure is twenty (20) micronewtons/square meter (2×10^{-4} microbar).

e) Person shall mean a person, firm, association, copartnership, joint venture, corporation or any entity, public or private in nature.

f) Sound level meter shall mean an instrument including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of noise and sound levels in a specified manner as specified in ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof.

TORRANCE MUNICIPAL CODE

g) Sound pressure level, in decibels (db) of a sound is twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of this sound to the reference pressure. For the purpose of this Chapter the reference pressure shall be twenty (20) micronewtons/square meter (2×10^{-4} microbar).

h) Implusive sound means a short duration sound (such as might be produced by the impact of a drophammer or pile driver) with one (1) second or less duration.

i) Motor vehicles shall include, but not be limited to, minibikes and go carts.

j) Sound amplifying equipment shall mean any machine or device for the amplification of the human voice, music, or any other sound. Sound amplifying equipment shall not include standard automobile radios when used and heard only by the occupants of the vehicle in which the automobile radio is installed. Sound amplifying equipment, as used in this Chapter, shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

k) Sound truck shall mean any motor vehicle, or any other vehicle regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

l) Commercial purpose shall mean and include the use, operation or maintenance of any sound amplifying equipment for the purpose of advertising any business or any goods or any services, or for the purpose of attracting the attention of the public to, or advertising for, or soliciting patronage or customers to or for any performance, show, entertainment, exhibition, or event, or for the purpose of demonstrating any such sound equipment.

m) Noncommercial purpose shall mean the use, operation or maintenance of any sound equipment for other than a commercial purpose. Noncommercial purposes shall mean and include, but shall not be limited to, philanthropic, political, patriotic and charitable purposes.

n) Residential land shall mean that land which is utilized for residential purposes or zoned for residential purposes.

o) Residential purpose means any purpose involving routine and relatively permanent use of a building as a dwelling, as opposed to relatively transient uses such as hotels and motels.

p) Day means the time period from 7:00 A.M. to 10:00 P.M.

q) Night means the time period from 10:00 P.M. to 7:00 A.M.

SECTION 46.1.3. MEASUREMENTS.

Noise levels shall be measured with a sound level meter satisfying the requirements of ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof. Noise level of steady or slowly varying sounds shall be measured using the slow dynamic characteristic of the sound level meter and by reading the central tendency of the needle. Noise level of impulse sounds shall be measured using the fast dynamic characteristic of the sound level meter and by reading the maximum indication of the needle.

11-29-74

TORRANCE MUNICIPAL CODE

ARTICLE 2 - SPECIAL NOISE SOURCES

SECTION 46.2.1. RADIO, TELEVISION SETS AND SIMILAR DEVICES.

a) Use Restricted. It shall be unlawful for any person within the City of Torrance to use or operate any radio receiving set, musical instrument, phonograph, television set, or other machine or device for the producing or reproducing of sound at any time in such a manner as to produce noise levels on residential land which would disturb the peace, quiet and comfort of neighboring residents or any reasonable person of normal sensitiveness residing in the area.

b) Prima Facie Violation. Any noise exceeding the ambient noise level at the property line of any residential land (or if a condominium or apartment house, within any adjoining apartment) by more than five (5) decibels shall be deemed to be prima facie evidence of a violation of the provisions of this Section.

SECTION 46.2.2. HAWKERS AND PEDDLERS.

It shall be unlawful for any person within the City to sell anything by outcry within any area of the City utilized for residential purposes. The provisions of this Section shall not be construed to prohibit the selling by outcry of merchandise, food and beverages at licensed sporting events, parades, fairs, circuses and other similar licensed public entertainment events.

SECTION 46.2.3. DRUMS.

It shall be unlawful for any person to use any drum or other instrument or device of any kind for the purpose of attracting attention by the creation of noise within the City. This Section shall not apply to any person who is a participant in a school band or duly licensed parade or who has been otherwise duly authorized by the City to engage in such conduct.

SECTION 46.2.4. SCHOOLS, HOSPITALS AND CHURCHES.

It shall be unlawful for any person to create any noise on any street, sidewalk or public place adjacent to any school, institution of learning or church while the same is in use or adjacent to any hospital, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets, sidewalks or public place indicating the presence of a school, church or hospital.

SECTION 46.2.5. ANIMALS AND FOWL.

No person shall keep or maintain, or permit the keeping of upon any premises owned, occupied or controlled by such person, any animal or fowl otherwise permitted to be kept which, by any sound, cry or behavior shall cause annoyance or discomfort to a reasonable person of normal sensitiveness on any residential land.

SECTION 46.2.6. MACHINERY, EQUIPMENT, FANS AND AIR CONDITIONING.

It shall be unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any residential land to exceed the ambient noise level by more than five (5) decibels.

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SECTION 46.2.7. OIL PRODUCTION EQUIPMENT.

(Added by 0-2528)

It shall be unlawful for any person to operate, or cause to be operated any oil production equipment in any manner so as to create any noise which would cause the noise level at the nearest property line of any residential land to exceed the ambient noise level by more than five (5) decibels; provided, however, that the aforesaid provisions of this Section shall not apply to oil production equipment being used in the drilling, redrilling, deepening, repair, maintenance or abandonment of an oil well.

11-22-74

TORRANCE MUNICIPAL CODE

ARTICLE 3 - CONSTRUCTION

SECTION 46.3.1. CONSTRUCTION OF BUILDINGS AND PROJECTS.

It shall be unlawful for any person within the City of Torrance to operate power construction tools or equipment in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area except between the hours of 7:00 A.M. and 8:00 P.M. of any day. Heavy construction equipment such as pile drivers, mechanical shovels, derricks, hoists, pneumatic hammers, compressors or similar devices shall not be operated at any time, within or adjacent to a residential area, without first obtaining from the Director of Building and Safety permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use, and the applicant shall be required to show that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers. Such permission to operate heavy construction equipment will be revoked if operation of such equipment is not in accordance to approval. No permission shall be required to perform emergency work as defined in Article 1 of this Chapter.

SECTION 46.3.2. OPERATION OF OIL EQUIPMENT.

(Added by 0-2528)

a) It shall be unlawful for any person to operate machinery or power tools for the repair, maintenance or abandonment of oil well equipment on Sundays and legal holidays and, except between the hours of 7:00 A.M. and 8:00 P.M., on any other day; provided, however, that the provisions of this subsection shall not apply to any well, the surface of which is three hundred (300) or more feet from any dwelling.

b) It shall be unlawful for any person to conduct oil drilling or redrilling operations other than circulation of mud, on Sundays and legal holidays and, except between the hours of 7:00 A.M. and 9:00 P.M., on any other day; provided, however, that the provisions of this subsection shall not apply to any well the surface of which is three hundred (300) or more feet from any dwelling.

c) It shall be unlawful for any person to operate machinery or power tools for the repair, maintenance or abandonment of oil well equipment or to conduct oil well drilling or redrilling operations at any time within three hundred (300) feet of any dwelling without first obtaining from the Director of Building and Safety permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use. The Director of Building and Safety shall issue such permit only if the applicant demonstrates to the reasonable satisfaction of the Director that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers or acoustical sound blankets as provided in Section 46.3.3. Such permission to operate oil well equipment shall be revoked if such equipment is not operated and construction is not accomplished in accordance with the conditions of approval. No permission shall be required to perform emergency work as defined in Article 1 of this Chapter. The person performing such emergency work shall first notify the occupants of adjacent residences and the Torrance Police Department as to the nature and extent of the work to be performed.

11-22-74

TORRANCE MUNICIPAL CODE

SECTION 46.3.3. ACOUSTICAL BLANKETS.

(Added by 0-2528)

Acoustical blankets shall be made of fibrous glass insulation 1-1/2 inches thick, 0.50 pounds per cubic foot density, 0.63 pounds per square foot weight, .00010 to .00015 fibre diameter (inches) with phenolic binder having a temperature limit of 450 degrees F. sewed between layers of fire retardant vinyl fibre glass cloth, 15-17 ounces per square yard sewed with dacron thread D-92 with stitches not more than six (6) to the inch. The lacing cord shall be flat vinyl coated tape composed of fibrous glass yard braided, heat set and bonded. The tape shall have a 90 pound tensile strength. Grommets shall be No. 4 brass. Provided, however, that there may be substituted for the aforesaid specifications an acoustical blanket which in the opinion of the Director of Building and Safety is equal to sound-proofing ability and fire resistive qualities to the aforesaid specifications.

11-22-74

SEC. 46.4.1.

TORRANCE MUNICIPAL CODE

ARTICLE 4 - VEHICLES

SECTION 46.4.1. VEHICLE REPAIRS.

It shall be unlawful for any person within the City of Torrance to repair, rebuild or test any motor vehicle at any time in such a manner that a reasonable person of normal sensitiveness located on residential land is caused discomfort or annoyance by reason of the noise produced therefrom.

SECTION 46.4.2. MOTOR DRIVEN VEHICLES.

It shall be unlawful for any person to operate any motor driven vehicle within the City in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance; provided, however, that any such vehicle which is operated upon any public highway, street or right-of-way shall be excluded from the provisions of this Section, provided the provisions of the California Motor Vehicle Code, Sections 23130, 27150 and 27151 are complied with.

TORRANCE MUNICIPAL CODE

ARTICLE 5 - AMPLIFIED SOUND

SECTION 46.5.1. PURPOSE.

The Council enacts the provisions of this Article for the sole purpose of securing and promoting the public health, comfort, safety, and welfare for its citizenry. While recognizing that the use of sound amplifying equipment is protected by the constitutional rights of freedom of speech and assembly, the Council nevertheless feels obligated to reasonably regulate the use of sound amplifying equipment in order to protect the correlative constitutional rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary noise.

SECTION 46.5.2. APPLICATION REQUIRED.

It shall be unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate within the City a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place or public property without first filing an application and obtaining a permit therefor as set forth in this Article.

SECTION 46.5.3. FILING APPLICATION.

Every user of sound amplifying equipment shall file an application with the License Supervisor for approval by the License Review Board ten (10) days prior to the date on which the sound amplifying equipment is intended to be used, which application shall be accompanied by a fee of Ten Dollars (\$10.00).

SECTION 46.5.4. CONTENTS OF APPLICATION.

The application shall contain the following information:

- 1) The name, address and telephone number of both the owner and user of the sound amplifying equipment;
- 2) The maximum sound producing power of the sound amplifying equipment which shall include the wattage to be used, the noise level (in decibels) of the sound which will be produced at a stated distance and at the angular position for which the noise level is a maximum, and the approximate distance for which sound will be audible from the sound amplifying equipment;
- 3) The license and motor number if a sound truck is to be used;
- 4) A general description of the sound amplifying equipment which is to be used; and
- 5) Whether the sound amplifying equipment will be used for commercial or non-commercial purposes.

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SECTION 46.5.5. APPROVAL OF LICENSE REVIEW BOARD.

The License Review Board shall approve the application unless the Board finds that:

- 1) The conditions of the motor vehicle movement are such that, in the opinion of the Board, use of the equipment would constitute a detriment to traffic safety; or
- 2) The conditions of pedestrian movement are such that, in the opinion of the Board, use of the equipment would constitute a detriment to traffic safety; or
- 3) The issuance of the license would be otherwise detrimental to the public health, safety or welfare; or
- 4) The issuance of the license will substantially interfere with the peace and quiet of the neighborhood or the community; or
- 5) The applicant would violate the provisions of this Code or of any other law.

SECTION 46.5.6. CONDITION OF APPROVAL.

The License Review Board may impose such conditions on the operation to be conducted under the permit as it may deem necessary or proper.

SECTION 46.5.7. APPEALS.

Any person aggrieved by disapproval of an application may appeal to the City Council by complying with the provisions of Article 5, Chapter 1, Division 1 of this Code relating to appeals.

SECTION 46.5.8. FEES.

Prior to the issuance of the permit, a fee in the amount of Ten Dollars (\$10.00) per day, or any portion thereof, shall be paid to the City, if the loudspeaker or sound amplifying equipment is to be used for commercial purposes. No fee shall be required for the operation of a loudspeaker or sound amplifying equipment for noncommercial purposes.

SECTION 46.5.9. REGULATIONS.

The commercial and noncommercial use of sound amplifying equipment shall be subject to the following regulations:

- a) The only sounds permitted shall be either music or human speech, or both.
- b) The operation of sound amplifying equipment shall only occur between the hours of 9:00 A.M. and 9:00 P.M. each day except on Sundays and legal holidays. No operation of sound amplifying equipment for commercial purposes shall be permitted on Sundays or legal holidays. The operation of sound amplifying equipment for noncommercial purposes on Sundays and legal holidays shall only occur between the hours of 10:00 A.M. and 6:00 P.M.

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c) No sound emanating from sound amplifying equipment shall exceed fifteen (15) dBA above the ambient as measured at any property line.

d) Notwithstanding the provisions of subsection c) of this Section, sound amplifying equipment shall not be operated within two hundred (200) feet of churches, schools or hospitals.

e) In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing or a nuisance to reasonable persons of normal sensitiveness within the area of audibility.

TORRANCE MUNICIPAL CODE

ARTICLE 6 - TRAIN HORNS AND WHISTLES

SECTION 46.6.1. EXCESSIVE SOUND PROHIBITED.

It shall be unlawful for any person to operate or sound or cause to be operated or sounded, between the hours of 10:00 P.M. of one day and 7:00 A.M. of the next day, a train horn or train whistle which creates noise in excess of ninety (90) db at any place or point three hundred (300) feet or more distant from along a line normal to the direction of travel of the source of such sound.

TORRANCE MUNICIPAL CODE

ARTICLE 7 - GENERAL NOISE REGULATIONS

SECTION 46.7.1. GENERAL NOISE REGULATIONS.

Notwithstanding any other provision of this Chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

SECTION 46.7.2. NOISE LIMITS.

To provide for methodical enforcement and to give reasonable notice of the performance standards to be met, the foregoing intent is expressed in the following numerical standards. For purposes of this Chapter, the City is divided into regions as set forth in Exhibit A.

a) Noise Limits on Residential Land. It shall be unlawful for any person within the City of Torrance (wherever located) to produce noise in excess of the following levels as received on residential land owned or occupied by another person within the designated regions. In addition to the noise limits stated herein, the noise limits set forth in Sec. 46.7.2.b) shall also be complied with.

1) For noise receivers located on residential land, for measurement positions five hundred (500) feet or more distant from the boundaries of Regions 1 and 2, the following limits apply:

REGION (in which noise receiver is located)	NOISE LEVEL, db	
	Day	Night
3	50	45
4	55	50

2) For noise receivers located on residential land, for positions within five hundred (500) feet from the boundary of Region 1 or 2, the following limits apply:

Five (5) dB above the limits set forth in Section 46.7.2.a) 1 above,
or 5 dB above the ambient noise level, whichever is the lower
number.

b) Noise Limits at Industrial and Commercial Boundaries:

1) Noise Sources in Region 1: It shall be unlawful for any person in Region 1 to produce noise levels at the boundary of Region 1 in excess of 70 dB during the day or 65 dB during the night.

2) Noise Sources in Region 2: It shall be unlawful for any person in Region 2 to produce noise levels at the boundary of Region 2 in excess of 60 dB during the day or 55 dB during the night.

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3) Noise Sources in All Remaining Industrial Use Land: It shall be unlawful for any person on industrial use land outside Region 1 and 2 to produce noise levels at his own property boundary in excess of 60 dB during the day or 55 dB during the night.

4) Noise Sources on All Land Use for Commercial Purposes: It shall be unlawful for any person on land used for commercial purposes to produce noise levels at his own property boundary in excess of 60 dB during the day or 55 dB during the night.

In addition to the noise limits set forth herein (Sec. 46.7.2.b), the noise limits set forth in Sec. 46.7.2.(a) shall also be complied with.

c) Corrections to the Noise Limits: The numerical limits given in Sec. 46.7.2.(a) and (b) shall be adjusted by addition of the following corrections where appropriate.

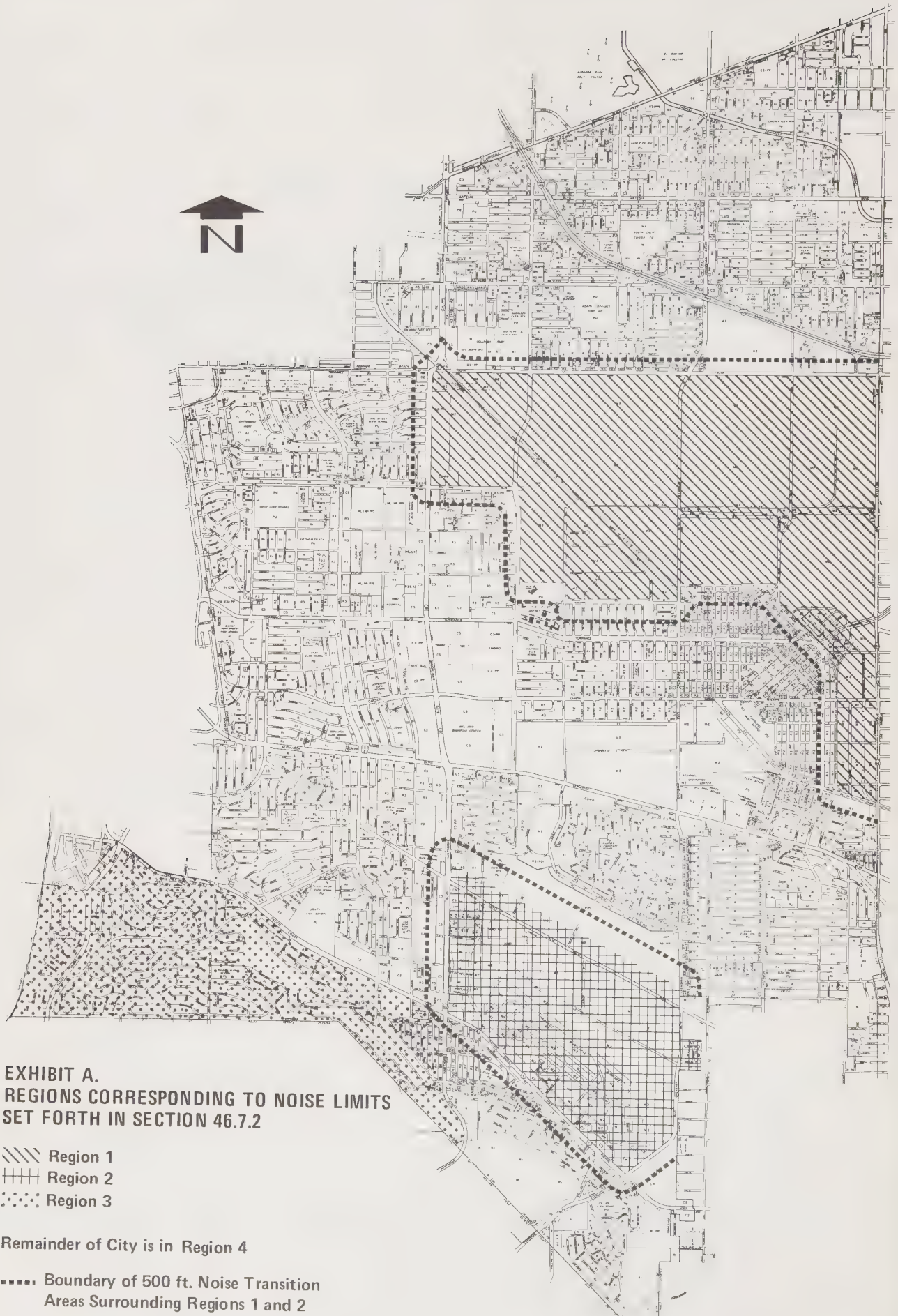
<u>Noise Conditions</u>	<u>Correction to the Limits, decibels</u>
1. Noise contains a steady, audible tone, such as a whine, screech or hum	-5
2. Noise is a repetitive impulsive noise, such as hammering or riveting	-5
3. If the noise is not continuous, <u>one</u> of the following corrections to the limits shall be applied:	
a) Noise occurs less than 5 hours per day or less than 1 hour per night	+5
b) Noise occurs less than 90 minutes per day or less than 20 minutes per night	+10
c) Noise occurs less than 30 minutes per day or less than 6 minutes per night	+15
4. Noise occurs on Sunday morning (between 12:01 A.M. and 12:01 P.M. Sunday)	-5

SECTION 46.7.3. EXCEPTIONS.

The following noise sources are specifically excluded from the provisions of this Chapter:

1) Aircraft in flight.

2) Motor vehicles operating in accordance with Sec. 46.4.2. and in accordance with all the sections of the California Motor Vehicles Code.



**EXHIBIT A.
REGIONS CORRESPONDING TO NOISE LIMITS
SET FORTH IN SECTION 46.7.2**

- Region 1
- Region 2
- Region 3

Remainder of City is in Region 4

Boundary of 500 ft. Noise Transition
Areas Surrounding Regions 1 and 2

Source: Torrance Municipal Code

APPENDIX D

ORDINANCE NO. 2437

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TORRANCE AMENDING SECTIONS 91.4.4, 91.4.5 AND 91.4.6 OF THE TORRANCE MUNICIPAL CODE CONCERNING REGULATIONS OF YARDS; ADDING SECTION 91.4.9 CONCERNING MAXIMUM LOT COVERAGE; ADDING SECTION 91.4.10 CONCERNING USABLE OPEN SPACE; AMENDING SUBSECTION e) OF SECTION 92.13.1 CONCERNING FENCE HEIGHT LIMITS; AND DELETING IN ITS ENTIRETY ARTICLE 3 OF CHAPTER 5, DIVISION 7 OF THE PUBLIC WORKS AND PROPERTY CODE

The City Council of the City of Torrance does hereby ordain as follows:

SECTION 1.

Section 91.4.4 is hereby amended to read in its entirety as follows:

"SECTION 91.4.4. FRONT YARD.

A front yard shall be provided with an average depth equal to the average depth of front yards on immediately adjacent parcels, provided, however, that:

- a) An average depth exceeding twenty (20) feet shall not be required.
- b) No building shall be constructed nearer than fifteen (15) feet to the front property line; however, in no case shall garages with doors facing the street be set back less than twenty (20) feet.
- c) Front yards on vacant lots shall be considered as having an average front setback of twenty (20) feet."

SECTION 2.

Section 91.4.5. is hereby amended to read in its entirety as follows:

"SECTION 91.4.5. SIDE YARD.

Side yard setbacks shall be provided as follows:

- a) Interior side yards shall equal ten (10) percent of the width of the lot except:
 - 1) No setback shall be required to exceed five (5) feet nor be less than three (3) feet.
 - 2) Provided, however, that construction may be permitted in any required interior side yard subject to the City and Building Codes and meeting the following conditions:
 - (a) That the distance between buildings on any two adjacent lots shall not be less than ten (10) percent of the combined widths of the lots.

(b) That the consent of the adjacent property owner shall be recorded as provided in Section 92.26.1.

b) Exterior side yards shall be not less than ten (10) feet in width."

SECTION 3.

SECTION 91.4.6. is hereby amended to read in its entirety as follows:

"SECTION 91.4.6. REAR YARD.

There shall be a rear yard of no less than five (5) feet for any portion of a dwelling one story in height and no less than ten (10) feet for any portion of a dwelling exceeding one story in height."

SECTION 4.

Section 91.4.11. is hereby added to read in its entirety as follows:

"SECTION 91.4.11. MAXIMUM LOT COVERAGE.

The total land area covered by structures, excluding covered patios open on two sides, shall not exceed fifty (50) percent of the total area of the lot."

SECTION 5.

Section 91.4.12. is hereby added to read in its entirety as follows:

"SECTION 91.4.12. USABLE OPEN SPACE.

There shall be provided a total area of usable open space not less than one-third (1/3) of the total lot area in one or more areas having minimum dimensions of ten (10) feet by fifteen (15) feet. Usable open space shall be defined as yards unobstructed from ground to sky, except as provided in Article 5, Chapter 2, Division 9, and excepting covered patios enclosed on not more than two (2) sides. Uses required by other provisions of the Code, such as driveways located within the required front yard setback, would not qualify as usable open space."

SECTION 6.

Section 92.13.1. is hereby amended to read in its entirety as follows:

"SECTION 92.13.1. RESIDENTIAL PURPOSES.

The following provisions shall apply to all land used for residential purposes:

a) No fence or wall three (3) feet or greater in height shall be constructed without first obtaining a building permit therefor.

b) No metal fence or metal wall shall be permitted except when constructed of chain link, open smooth wire, ornamental wrought iron, decorative metal beams or decorative panels.

c) No barbed wire is permitted.

d) No fence shall be constructed which is charged or chargeable with electricity.

e) Height limit:

1) Front Yard Area:

Any fence, wall or hedge within the required setback area of any lot shall not exceed a height of four (4) feet nor shall be constructed of materials other than decorative material compatible with the residential structure and the scheme of the general neighborhood, explicitly excluding the use of chain link, chicken wire, hog wire and fiberglass. However, if all the following conditions are met, a fence, wall or hedge up to six (6) feet in height may be constructed in the front setback:

(a) That no portion of said fence or wall shall project nearer than ten (10) feet to the front property line except where the average front setback in a block is less than twenty (20) feet, then it shall be allowed to project no nearer than five (5) feet to the front property line. That no portion of said fence or wall shall project into a triangle, the base of which coincides with the front property line of the subject and/or adjacent property, the apex of said triangle being 90° and located along a perpendicular line extending twenty (20) feet from the front property line along the centerline of the right-most driveway lane.

(b) That permanent landscaping shall be provided between fence or wall and the front property line and a permanent irrigation system be provided for all landscaping, including parkways and street trees.

2) Side Yard Area:

Any fence, or wall within the required side yard setback area of any lot shall not exceed a height of six (6) feet, except that the Planning Director may permit a greater height, not to exceed eight (8) feet, for that portion of yard to the rear of the front forty (40) feet upon a determination that a greater height will not be detrimental to the public welfare or to abutting property and that greater height is necessary for one or more of the following reasons:

(a) Enclosure of a private swimming pool or outdoor recreation area.

(b) Rear yard areas abutting commercial or multiple-residential uses.

(c) Capping of a six (6) foot fence with less than an eight (8) inch cap or decoration.

(d) Fences constructed on terrain with a grade difference of one (1) foot fall in five (5) linear feet.

3) Rear Yard Area:

Any fence, or wall within the required rear yard setback area of any lot shall not exceed a height of six (6) feet, except that the Planning Director may permit a greater height, not to exceed eight (8) feet, upon a determination that the standards for an exception, established in Section 92.13.1. e), 2) are satisfied.

4) Notice and Appeal:

(a) Upon receipt of an application for an exception to the side yard or rear yard area fence or wall height units, the Planning Director shall notify by mail the owner of any property which immediately abuts the fence or wall indicated on the

application that there is an application on file with the Planning Department and that the abutting property owner has ten (10) days in which to protest the application either in writing or in person.

(b) If any protest is made against the application and the Planning Director grants the application or the Planning Director denies the application or grants the application with conditions, the Planning Director shall notify the protesting property owner or the applicant, as the case may be, of his decision and of the right of appeal.

(c) Any property owner who has made a protest to the Planning Director, or applicant whose application has been denied or granted with conditions and who is not satisfied with the decision of the Planning Director, may file an appeal with the Planning Commission. Any such appeal must be filed in writing within twenty-one (21) days after notice of the decision of the Planning Director has been mailed and must be accompanied by a fee of one-half of the application fee provided in Section 99.1.12 of this code.

(d) The decision of the Planning Commission may be appealed to the City Council as provided in Article 5, Division 1 of this code.

f) Swimming Pool Enclosures: A fence or wall shall be constructed to a minimum height of five (5) feet above adjacent property elevations in such a manner as to completely enclose any swimming pool or other body of water which, at any point, reaches a depth of twelve (12) or more inches. The wall of a building may be considered part of such wall. Such wall or fence surrounding a swimming pool or other body of water shall have no openings greater than four (4) inches in width nor less than two (2) feet in height, shall not be a ladder-like design, and shall be constructed of a material and design to prevent any access thereto except by opening a self-closing, self-latching gate upon which a latch is located at least four feet six inches (4' 6") above the bottom of the gate.

g) Retaining Walls: That portion of a wall which retains an earth bank and provides internal support to grade shall not be considered as contributing to the permissible overall height of a fence or wall when constructed within the rear yard or interior side yard setback area, provided however:

1) That no retaining wall shall be constructed which exceeds five (5) feet in height. If the grade to be retained exceeds five (5) feet, additional retaining walls may be constructed at higher elevations provided a planter area not less than two (2) feet in width is constructed between said retaining walls and is landscaped.

2) That any retaining wall which exceeds three (3) feet in height must be topped by a wall or fence not less than three (3) feet in height unless the retaining wall is one of the lower of a series of retaining walls as described above."

SECTION 7.

Article 3 of Chapter 5, Division 7 of the Public Works and Property Code is deleted in its entirety.

SECTION 8.

Any provisions of the Torrance Municipal Code, or appendices thereto or any other ordinances of the city, inconsistent herewith to the extent of such inconsistencies, and no further, are hereby repealed.

SECTION 9.

If any section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of the ordinance. The City Council hereby declares that it would have passed this ordinance and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

SECTION 10.

Any person violating any of the provisions of this ordinance shall be guilty of a misdemeanor and, upon conviction thereof, shall be subject to a fine not exceeding Five Hundred Dollars (\$500.00) or six (6) months in the County Jail of Los Angeles County, or by both such fine and imprisonment in the discretion of the Court.

APPENDIX E

October 1, 1974

California Administrative Code, Title 25

Chapter 1, Subchapter 1

Article 4. Noise Insulation Standards

1092. Noise Insulation Standards. Noise insulation standards shall be in accordance with the applicable requirements of California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Section T25-1092, which reads as follows:

T25-1092. Noise Insulation Standards. (a) Purpose. The purpose of this article is to establish uniform minimum noise insulation performance standards to protect persons within new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings from the effects of excessive noise, including but not limited to hearing loss or impairment and persistent interference with speech and sleep.

(b) Application and Scope. The provisions of this article relating to noise insulation performance standards apply to new hotels, motels, apartment houses and dwellings other than detached single-family dwellings.

(c) Definitions. The following special definitions shall apply to this article as applicable:

(1) Impact Insulation Class (IIC) - A single number rating for ceiling-floor construction that represents the ability of the construction to isolate impact noise, where measurement procedure is based on ASTM E492-73T and as defined in UBC Standard No. 35-2.

(2) Sound Transmission Class (STC) - A single figure rating for floor-ceiling and interior wall partition construction that represents the ability of the construction to isolate airborne noise, where measurement procedure is based on ASTM E90-70 or ASTM E366-71 and as defined in UBC Standard No. 35-1.

(3) Detached Single-Family Dwelling - Any single-family dwelling which is separated from adjacent property lines by 3 feet or more is separated from adjacent buildings by 6 feet or more.

(d) Sound Transmission Control Between Dwelling Units.

(1) Wall and Floor-Ceiling Assemblies. Wall and floor-ceiling assemblies separating dwelling units or guest rooms from each other and from public space such as interior corridors and service areas shall provide airborne sound insulation for walls, and both airborne and impact sound insulation for floor-ceiling assemblies.

(2) Airborne Sound Insulation. All such separating walls and floor-ceiling assemblies shall provide an airborne sound insulation equal to that required to meet a Sound Transmission Class (STC) of 50 (45 if field tested) as defined in UBC Standard No. 35-1.

Penetrations or openings in construction assemblies for piping, electrical devices, recessed cabinets, bathtubs, soffits, or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings.

Dwelling unit entrance doors from interior corridors together with their perimeter seals shall have a Sound Transmission Class (STC) rating of not less than 30 and such perimeter seals shall be maintained in good operating condition.

(3) Impact Sound Insulation. All separating floor-ceiling assemblies between units or guest rooms shall provide impact sound insulation equal to that required to meet an Impact Insulation Class (IIC) of 50 (45 if field tested) as defined in UBC Standard No. 35-2. Floor coverings may be included in the assembly to obtain the required rating, and must be retained as a permanent part of the assembly and may only be replaced by other floor covering that provides the same sound insulation required above.

(4) Tested Assemblies. Field or laboratory tested wall or floor-ceiling designs having an STC or IIC of 50 or more as determined by UBC Standard 35-1, 35-2 or 35-3 may be used without any additional field testing when in the opinion of the Building Officials the laboratory tested design has not been compromised by flanking paths. Tests may be required by the Building Official when evidence of compromised separations is noted.

(5) Field Testing. Field testing, when required, shall be done under the supervision of a person experienced in the field of acoustical testing and engineering, who shall forward test results to the Building Official showing that the minimum sound insulation requirements stated above have been met.

(6) Airborne Sound Insulation Field Tests. When required, airborne sound insulation shall be determined according to the applicable Field Airborne Sound Transmission Loss Test procedures of U.B.C. Standard No. 35-3. All sound transmitted from the source room to the receiving room shall be considered to be transmitted through the test partition.

(7) Impact Sound Insulation Field Test. When required, impact sound insulation shall be determined in accordance with U.B.C. Standard No. 35-2.

NOTE: Excerpts from the 1973 U.B.C., Appendix Chapter 35, reproduced with permission of International Conference of Building Officials, 5360 S. Workman Mill Road, Whittier, California.

(e) Noise Insulation from Exterior Sources.

(1) Location and Orientation. Consistent with land use standards, residential structures located in noise critical areas, such as proximity to select system of county roads and city streets (as specified in 186.4 of the State of California Streets and Highways Code), railroads, rapid transit lines, airports, or industrial areas shall be designed to prevent the intrusion of exterior noises beyond prescribed levels with all exterior doors and windows in the closed position. Proper design shall include, but shall not be limited to, orientation of the residential structure, set-backs, shielding, and sound insulation of the building itself.

(2) Interior Noise Levels. Interior community noise equivalent levels (CNEL) with windows closed, attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room.

(3) Airport Noise Source. Residential structures to be located within an annual CNEL contour (as defined in Title 4, Subchapter 6, California Administrative Code) of 60 require an acoustical analysis showing that the structure has been designed to limit intruding noise to the prescribed allowable levels. CNEL's shall be as determined by the local jurisdiction in accordance with its local general Plan.

(4) Vehicular and Industrial Noise Sources. Residential buildings or structures to be located within annual exterior community noise equivalent level contours of 60 dB adjacent to the select system of county roads and city streets (as specified in Section 186.4 of the State of California Streets and Highways Code), freeways, state highways, railroads, rapid-transit lines and industrial noise sources shall require an acoustical analysis showing that the proposed building has been designed to limit intruding noise to the allowable interior noise levels prescribed in Section T25-1092(e)(2).

Exception: Railroads, where there are no nighttime (10:00 p.m. to 7:00 a.m.) railway operations and where daytime (7:00 a.m. to 10:00 p.m.) railway operations do not exceed four (4) per day.

(f) Compliance.

(1) Evidence of compliance shall consist of submittal of an acoustical analysis report, prepared under the supervision of a person experienced in the field of acoustical engineering, with the application for building permit. The report shall show topographical relationship of noise sources and dwelling site, identification of noise sources and their characteristics, predicted noise spectra at the exterior of the proposed dwelling structure considering present and future land usage, basis for the prediction (measured or obtained from published data), noise attenuation measures to be applied, and an analysis of the noise insulation effectiveness of the proposed construction showing that the prescribed interior noise level requirements are met. If interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify the means that will be employed to provide ventilation, and cooling if necessary, to provide a habitable interior environment.

(2) Field Testing. Only when inspection indicates that the construction is not in accordance with the approved design, field testing may be required. Interior noise measurements shall be taken under conditions of typical maximum exterior noise levels within legal limits. A test report showing compliance or noncompliance with prescribed interior allowable levels shall be submitted to the Building Official.

Where a complaint as to noncompliance with this article requires a field test to resolve the complaint, the complainant shall post a bond or adequate funds in escrow for the cost of said testing. Such costs shall be chargeable to the complainant when such field tests show that compliance with these regulations is in fact present. If such tests show noncompliance, then such testing costs shall be borne by the owner or builder.

APPENDIX F

COMMUNITY OPINION SURVEY

In March and April of 1970 the Torrance League of Women Voters conducted a community opinion survey in the City of Torrance. The purpose of the survey was to reveal the personal opinions and priorities of Torrance residents regarding recreation, parks, libraries, open space, environment, and education. Using a table of random numbers, it was determined that every sixth house or dwelling unit in the City would be sampled. On this basis, 783 dwelling units, or almost 2 percent of the units in the City, were sampled. Questions 7 and 31 of the survey touched upon the subject of noise in the local environment, and are presented below in the entirety.

Question 7: Which two of these are the most important problems in Torrance? (Respondents were handed a card with 12 possible choices.)

Traffic congestion was by far the City's biggest problem, with more than one-third of those interviewed citing it as their pet peeve. Trailing behind by a large margin in the number two and three spots were taxes, which bothered 16% of the respondents, and public transportation, which was top complaint of 13% of those interviewed. Other top problems listed were: smog, 6%; schools, 5%; **noise, 4%**; "other", 4%; distance to job, 3%; housing, 3%; racial make-up, 2%; ugliness, 2%; and parks and recreation facilities, 1%.

Question 31: Living in Torrance, are you or members of your family bothered by any of the following things? (Respondents were given nine different environmental factors and asked to indicate how frequently they were bothered by each of them. They were given a choice of "very often", "sometimes", "hardly ever", and "never".)

Ranked in order of what bothered them the most to what bothered them the least, respondents listed their complaints as: industrial fumes, smog, **auto noise, traffic noise, airplane noise**, auto fumes, too many commercial signs, overhead wires, and industrial noise.

On a city-wide basis, the order of frequency of complaints is as follows:

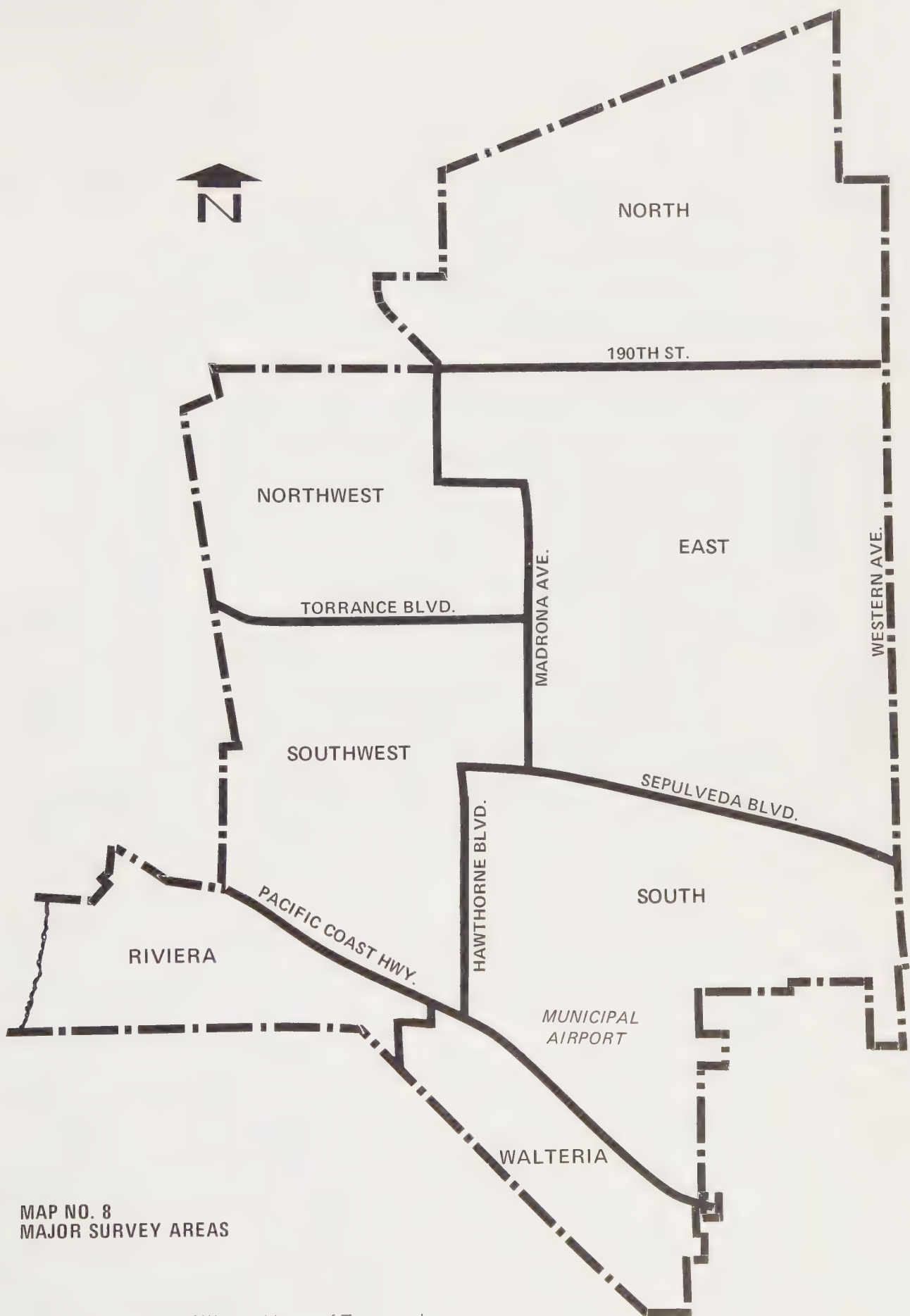
	<u>Very Often</u>	<u>Sometimes</u>	<u>Hardly Ever</u>	<u>Never</u>
Smog	11%	39%	37%	13%
Airplane Noise	16%	24%	29%	30%
Industrial Noise	8%	9%	21%	62%
Industrial Fumes	22%	32%	15%	31%
Auto Noise	25%	24%	21%	31%
Auto Fumes	8%	17%	25%	47%
Traffic Noise	22%	21%	20%	37%
Overhead Wires	12%	9%	14%	64%
Too Many Commercial Signs	12%	12%	14%	62%

Although in the number three spot on the annoyance index city-wide, auto noise was the most annoying aspect in the environment of the persons interviewed in Waleria (Map 8).

Airplane noise which was in fifth place city-wide was the biggest complaint of residents in two areas of the City: Southwest Torrance and the Riviera, the areas in closest proximity to the airport.

Ranked by area as to what bothered them most (with 1 being the most bothersome), the bother index appears as follows:

	<u>City-wide</u>	<u>East</u>	<u>SW</u>	<u>NW</u>	<u>North</u>	<u>South</u>	<u>Riviera</u>	<u>Walteria</u>
Smog	2	1	3	3	2	1	3	4
Airplane Noise	5	5	1	6	5	2	1	2-3
Industrial Noise	9	7	9	5	8	9	9	9
Industrial Fumes	1	2	5	1	1	4	8	5
Overhead Wire	8	9	8	9	7	8	4	8
Auto Noise	3	3	2	2	3	3	2	1
Auto Fumes	6	6	7	7	6	6	7	6
Traffic Noise	4	4	4	4	4	5	5	2-3
Signs	7	8	6	8	9	7	6	7



MAP NO. 8
MAJOR SURVEY AREAS

Source: The League of Women Voters of Torrance, Inc.

footnotes

- ¹ Dr. Knudsen is Chancellor and Professor of Physics Emeritus at the University of California, Los Angeles.
- ² Dr. Knudsen as quoted in: Branch, Melville C. and R. Dale Beland, *Outdoor Noise and the Metropolitan Environment*, Los Angeles City Planning Department, Los Angeles, 1970.
- ³ Dubos, Rene, *Man Adapting*, Yale University Press, New Haven, 1965, pp. 278-279.
- ⁴ The impact of noise generated by aircraft using the Torrance Municipal Airport will be thoroughly analyzed in the Master Plan for the Torrance Municipal Airport. The only reference made to aircraft noise in this document is in the terms of its effect on noise levels at random monitoring points. However, the significant findings of the abovementioned document will be considered a separate but integral part of the Noise Element when they become available.
- ⁵ California Council on Intergovernmental Relations, *General Plan Guidelines*, Office of Planning and Research, Sacramento, September, 1973.
- ⁶ These single events were not included in the computation of the ambients.
- ⁷ Contours will not be prepared below 60 dBA for local arterials in light of the existing ambient noise levels shown on Map 1.
- ⁸ Los Angeles County Road Dept., "Appendix D", *Los Angeles County Noise Element, Technical Report*, September 25, 1974.
- ⁹ Robinette, Gary O., *Plants/People/and Environmental Quality*, U.S. Department of the Interior and the American Society of Landscape Architects Foundation, Washington, D.C.: U.S. Government Printing Office, 1972.
- ¹⁰ Los Angeles County Road Department, *Los Angeles County Noise Element*, Technical Report, Appendix D, Los Angeles, September, 1974.

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James R. Armstrong, councilman
George W. Brewster, councilman
Cathryn A. Geissert, Councilwoman
George B. Surber, councilman
William J. Uerkwitz, councilman
Dr. Donald E. Wilson, councilman

Edward J. Ferraro, city manager
Vernon W. Coil, city clerk
Thomas C. Rupert, city treasurer

PLANNING COMMISSION

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Gerald L. Alter, commissioner
Douglas S. Stenhouse, commissioner
Richard T. Hall, commissioner
Velma Shelbourn, commissioner
Kenny Uyeda, commissioner
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